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Vol. V

No. 10



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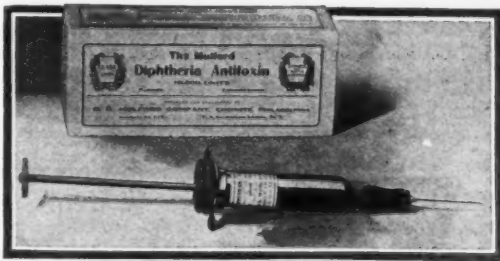
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INTRODUCTORY . . . . .	609	EDITORIAL COMMENT . . . . .	634
FRONTISPIECE . . . . .	610	CANADIAN POETS . . . . .	636
SPECIAL ARTICLES—		MATTERS MILITARY . . . . . 641	
Public Health and the General Practitioner. By T. H. Whitelaw, B.A., M.B. . . . .	611	VETERINARY HYGIENE . . . . .	647
The Use of Rebiipelagar in Water and Milk Examination. By Joseph Race . . . . .	616	SANITARY INSPECTORS' ASS'N. . . . .	650
Standards With Reference to Sewage Treatment. By T. Aird Murray, M. Can. Soc., C.E. . . . .	619		
Some Difficulties of the Medical Officer of Health in Towns and Rural Communities. By T. W. Var-don, M.D. . . . .	624		
Conservation of Child Life. By J. J. Kelso . . . . .	626		
Chronicles "En Route." By Florence Withrow, B.A. . . . .	628		

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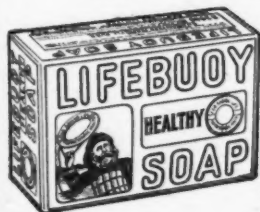
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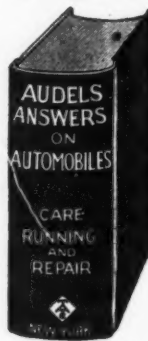
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## Deserters

ARTEMUS WARD, the famous American humorist, whose humor sometimes was a lance-thrust, once said that he was willing to sacrifice all his first wife's relations on the altar of his country. Many a man has been willing to let others do his fighting for him—willing, also, to share the rewards of peace and victory. Men of this type belong to the deserter class.

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## WHY?

ALBERT D. WATSON

Does the mother of Nations bare the sword  
To rescue her children opprest?  
They have all that the richest lands afford,  
They sit content at an ample board  
As safe as a bird in its nest.

Has she laid her spear on the shield of Mars  
New lands in the wars to gain?  
Her dominions extend wherever the stars  
Are blushing for shame at our foolish wars,  
Her ships are on every main.

And not that the world may acclaim her grand  
Is the roar of her guns on the seas;  
Her name is lusted on every strand,  
Her glory is known to the farthest land  
Where her standard floats on the breeze.

Ah, this is the pillar of cloud and fire  
That leads her hosts along,  
And this is the goal of their deep desire,  
The road where their feet shall never tire,—  
To be just, keep faith, and be strong.

So the Mother of Nations has risen in might  
At the word of the onward call;  
She has shaken her banners forth to the light,  
And marched to the front of the people's fight  
Like the van of a tidal wall.



K of K



# The Public Health Journal

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## PUBLIC HEALTH AND THE GENERAL PRACTITIONER

By T. H. WHITELAW, B.A., M.B., M.O.H.

*Edmonton, Alberta*

**T**WENTY years ago questions of public health occupied very little of the time and attention of the members of Medical Associations at their annual meetings. To-day, it is to be noted that papers on the prevention of disease are becoming increasingly more common on the programmes of Medical Conventions. That it is so is surely creditable to the medical profession, and in accordance with the best traditions of the profession.

Comparatively little change has occurred in the treatment of medical and surgical diseases, as compared with the recent advances which have been made in bacteriological and epidemiological study of the causes and prevention of communicable diseases. As a result of this study, a new Public Health has been evolved which has relegated to oblivion, or to comparative unimportance, many of the supposed factors in the causation of infective and contagious diseases, which those of us who graduated even fifteen or twenty years ago were taught, or were at least allowed to assimilate as the chief factors concerned.

The bacteriologist, the epidemiologist, and the vital statistician, working independently for the most part, have reached a common basis, and have clearly indicated the desirability of putting to one side many of the traditional fallacies regarding communicable diseases which are still firmly

entrenched in the minds of the laity, and to which many members of the medical profession engaged in general practice, still yield a tacit obedience. It is with a view, therefore, of encouraging the general practitioner to co-operate with public health officials in assisting the general public to gain saner views of the real, or at least the more important sources of infection in communicable diseases, that I have had the temerity to attempt to place before you some of the fallacious and mischievous ideas naturally held by even the intelligent laity as a result of the illogical teachings of our profession up to very recent years, and which not a few medical men still support, or at least do not oppose. In speculating as to the cause of an outbreak of infectious disease in a given family, the attention is often concentrated on the environment of the individual affected, insanitary conditions, real or imaginary in the neighborhood, etc., to the exclusion of the real cause of infection in some of the human beings with whom that individual has recently been in contact. In other words, the source of disease is sought for in inanimate things, rather than in man himself. In accordance with this environmental theory of disease, it is not so long since malaria was believed to be due to exhalations from swamps and sloughs; typhoid fever to sewer gas, odors from stag-

nant water, damp cellars, leaky plumbing, decaying vegetation and garbage, and dead animals; and, in general, everything of a disagreeable or non-aesthetic nature was supposed to give origin to all the various germs of infectious disease, apart altogether from the human species.

During the excessively wet season of June, a great deal of surface water collected in flat or low parts of our city, especially where many vacant lots exist and public utilities have not been as yet fully installed. The Health Department was inundated with complaints of conditions, dependent largely on the non-completion of trunk sewers to drain those areas. Almost invariably the ground of appeal to the Health Department was the alleged menace to the health of the citizens involved in the presence in their vicinity of water said to be stagnant, on which green scum was already beginning to form. This stagnant water, and especially the green scum was declared to be certain to produce an epidemic of typhoid, diphtheria, scarlet fever or smallpox. Everything possible was done to remove the surface water by drainage, flooded cellars were pumped out and assurances given these good citizens that their fears regarding infectious disease resulting from such conditions were groundless. In most cases, the health inspector on his visit failed to discern either the odor complained of or the green scum, though the deplorable conditions of mud and water about the premises, and frequently a flooded cellar under the house quite justified a complaint as to the lack of drainage. In the C. P. R. subway on Jasper Avenue, a catch basin emitted for some time recently, a decidedly objectionable odor. Many justifiable complaints were made regarding this nuisance, but as was the case with the stagnant water and green scum, the fear of contracting typhoid fever or other malady from this odor in passing through the subway, was usually strongly dwelt upon. These two circumstances will serve to indicate how strongly the conviction is held by the average person of intelligence, that matters or things which are offensive to the senses, especially the sense of smell, are necessarily the habitat of disease germs, and whence they originate.

That the air is the chief vehicle of transmission of disease germs has been

universally believed in, and until recently has been assented to by the great majority of medical men. In a handbook of Hygiene, whose author was George Wilson, M.A., M.D., F.R.S.E., a Medical Officer of Health for Warwickshire, England, and which textbook was in use in my student days, the following definition of infectious diseases is found: "By infectious diseases is meant all diseases which are communicable from one person to another, whether by actual contact, or through the agency of certain media, such as air or water." He further enters into an argument in support of the theory that bacteria and disease germs are generated *de novo*, and undoubtedly have a birth-place exterior to man. In Parke's Hygiene of 1883, a standard textbook of the time, malaria and yellow fever were considered typical air borne diseases. That air infection was considered of relatively greater importance in surgery than contact infection in the eighties, is indicated by the preparations for an operation in vogue at the time at Bellevue Hospital. Dr. Chapin, of Providence, who has given many years to a study on this subject, relates how a phenol spray was used in the operating room for several hours before the operation, to disinfect the atmosphere. He relates how, during an operation, the surgeon dropped his knife on the floor, picked it up, wiped it on his gown, and proceeded with the operation, and that the incident attracted little notice and caused no comment. We know now that air infection of wounds is a negligible quantity. Ochsner says: "Air infection is not impossible, but practically no wound infection is to be considered except from contact." And yet it has been clearly demonstrated that the air of operating rooms does contain pus organisms. The explanation of their non-virulence is probably due to their greatly diminished vitality, due to drying and exposure to light, and to their small number. In any case, they fail to infect the freshly cut tissues of an open wound. This being the case, is it reasonable to believe that the ordinary pathogenic organisms float in the air in such numbers and possessed of sufficient vitality to penetrate the intact mucous surfaces of the respiratory or alimentary tract?

Since the mosquito has been found to be the factor in the cause of malaria and yel-

low fever, previously believed to be air-borne diseases, researches have reduced the list of possible air borne diseases to a comparatively small number, and in these, too, the air as a medium of infection is, relatively speaking, now known to be unimportant. That measles, smallpox and tuberculosis may be at times air borne, is still an open question, but many of the leading authorities who have studied extensively along this line, are now convinced that even in these diseases, air infection is relatively so rare and unimportant as to be negligible. In my rather limited experience, with over one hundred cases of smallpox, I have been able to satisfy myself that personal contact with a previous case was present in the great majority of the cases, and in no case have I been able to prove that where either fomites or air infection might appear to have been a possible source, that contact could be absolutely excluded as a factor. In an article on air as a vehicle of infection, in the February number of the *Journal of the American Medical Association*, Dr. Chapin, Superintendent of Health of Providence, deals fully with the subject, and sums up as follows: "There is little evidence that among the diseases which commonly occupy our attention in this part of the world, aerial transmission is a factor of importance. In most, it is under ordinary conditions of home and hospital, a negligible factor. For tuberculosis alone, is there evidence that air borne infection is a factor of moment, but the latest word has not been said as to the etiology of this disease. We may be sure that the sewer gas bogey is laid, the notion that dust is a dangerous vehicle of every day infection is unsupported, and that mouth spray is usually effective only at short distances."

How genuine is the fear of danger from air borne infection in the public mind is strikingly indicated by the clamor of protest which assails a city administration where it proposes to build a municipal hospital for contagious diseases in any section where a large residential population has become established in advance. In Toronto the Good, and supposedly the intelligent, an admirable site for such an institution selected by the Medical Officer of Health, had to be abandoned recently on account of strong public protest, and lat-

er, when a site outside the city limits remote from population was suggested, the farmers of York County registered an objection. And that this theory of an air borne infection still influences many members of our profession, and even some of our public health officials, is indicated in the tendency to build hospitals for contagious diseases on the pavilion principle, with all their attendant inconveniences and unnecessary expense, rather than on the block system, in spite of the fact that infectious diseases are now treated with the best results and maximum freedom from cross infection in many hospitals recently erected, where the only precautions taken are to guard against contact infection, and air borne infection is absolutely disregarded. Examples of such hospitals are the Pasteur Institute, Paris; the Kingston Avenue Hospital, Brooklyn; the North Brothers' Island Hospital; the Children's Hospital in Paris, and the contagious group of the Providence City Hospital. Winnipeg has recently opened its new block hospital, conducted on the same principle, and with efficient nursing will, no doubt, have equally good results. A well trained and strictly disciplined staff of nurses is of course essential to success, but no other quality of nurses should be tolerated in any type of hospital if cross infection is to be reduced to a minimum. Rosenau, in his recent excellent work on Preventive Medicine and Hygiene, states that communicable diseases are not conveyed from ward to ward or even from bed to bed, in well managed hospitals.

The intention of the foregoing is to specially emphasize the fact that the great factor in the causation of infectious or contagious diseases is contact infection, which implies the close association of the well with the affected, and the transference to the former of the infective contagion contained in the secretions or excretions while still moist and fresh, on fingers, food, flies, towels, napkins, handkerchiefs, bedclothing, cups, spoons, toys, etc., and which have recently been mouthed or handled by, or in contact with, the affected person or his discharges. The importance, therefore, of the early and correct diagnosis, and the prompt reporting to the Health Department of every case of communicable disease is self-evi-



dent. Even where the case is only suspected, a report should be made and precautions taken until it is ascertained that no infectious disease exists. It is upon the honesty and devotion to the public interest, of the general practitioner, that a Health Department must rely, if infectious disease is to be reduced to a minimum. Fortunately, the majority of medical men do act in the public interest and co-operate with the Health Department in the matter of reporting and quarantining infectious disease, but a minority, influenced by the wishes or demands of their patrons, generally people of social prominence, either postpone sending in a report to the Health Office for a week or longer with the object of shortening the period of quarantine, or neglect to do so altogether, saving their conscience by diagnosing what they really suspect or know to be a mild scarlet fever, as a rash caused by drugs, heat, intestinal derangement, or as many more pure guesses as their ingenuity can invent, in order to retain the good-will and patronage of a very desirable family connection, which looks upon a quarantine placard as anathema, except when it is on their neighbor's house. It may be that such cases never become known to the Health Officer, or, if so, at too late a date to obtain sufficient proof to justify him in resorting to a prosecution of the delinquent householder and the more guilty physician, who chuckles softly to himself, quite regardless of the damaged ears, spoiled kidneys, or even deaths which may quite readily be the direct result of his criminal carelessness. As I have indicated, and have found by experiment, it is not easy for a Health Officer to bring about by prosecution under the Health Act, the punishment the offence so richly merits. Such physicians are a disgrace to our profession, and such conduct, if capable of proof, should debar them from further practice. When confronted with the proofs of his failure in public duty, such a physician takes refuge in the statement that he did not think it was anything infectious, or that he could not make a positive diagnosis on the first visit, and that a second visit was not requested. In short, he will twist and quibble to such an extent that it is usually impossible to secure a conviction before most magistrates,

whose sympathies are usually not on the side of the prosecution, and any flaw or technicality of the law is taken as a justification of the usual verdict "dismissed with costs." I have known reputable, honorable physicians, whose report is promptly followed by quarantine, discarded as a family physician, and another physician called in on future occasions because he has a reputation for not reporting anything. The only remedy is for the Health Officer to have the moral courage to prosecute vigorously in all cases where he knows or has good reason to suspect such conduct, and for the general practitioners to give him their moral support in so doing.

The Provincial Health Act regulations making the vaccination of school children compulsory, is another matter in which the general practitioner is concerned. There are always a number of parents in every community who object to having their children vaccinated, and who endeavor to obtain from the family physician certificates of exemption on some pretext or another. In rare cases such requests are legitimate, and exemption certificates should be granted, but, in my opinion, some physicians yield too readily to such demands, and grant certificates for insufficient and trivial reasons. Little difficulty has been experienced in Edmonton, except in the case of an osteopathic physician, who publicly poses as an anti-vaccinist, and who recently began to issue certificates wholesale, for which in some instances, if not in all, he certainly collected a fee. This was brought to the attention of the Provincial Medical Officer of Health, who promptly had an amendment to the Health Act passed, making all such certificates of no effect until countersigned by the Medical Officer of Health or the Chairman of the Board of Health. His action was commended by a resolution of the Edmonton Medical Society without a dissenting voice. I offer it as a suggestion that the result of this amendment is that the general practitioner can now, if he so desires, without risking the good-will of his anti-vaccination patrons, refer them to the Medical Officer of Health, or the Chairman of the Board of Health, as the final arbiter of the question, and shoulder the whole responsibility on to him, which



responsibility he should be capable of assuming satisfactorily, if he has the firmness, tact and good judgment necessary to gain the confidence of the profession generally.

It may be of interest to quote from the many certificates issued by the osteopathist referred to, two which recently came to me through the School Board, and which, before the new regulations were passed, were sufficient to evade the vaccination law:

"I have examined John Jones and am of opinion that vaccination should be waived in his case on account of a possible impairment in the integrity of the health of his nervous system."

And

"This is to certify that I have examined Arabella Samantha Allen as to the normal condition of her nervous strength and resistance, and find it is not sufficiently normal to risk the possibly harmful effects of vaccination."

(Signed) ———, Physician.

In presenting this paper I am conscious of its limitations and defects, and that

some conclusions come to are open to criticism and argument, but I have accomplished my purpose if I have made a reasonable plea for a fuller and better understanding of the latest developments in the study of public health matters, the discarding of time worn theories which have been shown to be erroneous, and our acceptance of such of the views of modern sanitarians as are founded on logical and scientific argument, as being a better basis for the development in the community, of a new and saner public health. Much time, energy, and money is still being frittered away on non-essentials, or matters of comparative unimportance, while the strongest citadels of communicable disease are left practically unbreached.

In conclusion, I take pleasure in acknowledging the loyal support and co-operation I have, as Medical Officer of Health in Edmonton, received from the great majority of the general practitioners. Without this support, the position of a Medical Officer of Health would become in time untenable to a self-respecting official who honestly tries to do his duty to the public, often in the face of political and selfish interests leagued to secure his retirement.

### THE VENOMOUS MIND.

#### Slander.

##### Diagnosis—

Slander is moral murder.—M. Lubert.

##### Remedy—

An itinerant trader in spices who traveled in the neighbourhood of Ziporah, called aloud, "Who will buy the balm of life?" A crowd thronged around him to buy the elixir, to whom he said, "If you want to possess this life prolonging balm, here it is," and taking the Psalm from his pocket read aloud, "Where is the man that desireth life? Who loveth many days to live happy? GUARD THY TONGUE FROM SPEAKING EVIL, AND THY LIPS FROM UTTERING GUILE."—Oriental.

# THE USE OF REBIPELAGAR IN WATER AND MILK EXAMINATION

By JOSEPH RACE, F.I.C.

City Bacteriologist, Ottawa

**R**EBIPELAGAR or neutral red lactose bile salt agar, is a modification of the bile salt agar which was introduced by MacConkey in 1900. This particular modification was suggested by Grunbaum and Hume in 1902, and has the following composition.

Sodium taurocholate (commercial) . . . . .	5 grammes
Witte's peptone . . . . .	20 "
Agar . . . . .	20 "
Lactose . . . . .	10 "
1% neutral red solution..	5 coms.
Distilled water . . . . .	1000 coms.

The agar, taurocholate, and peptone are added to the water in a large enamelled pan and boiled for some time; after cooling to 50°C, 10 gr. of egg albumen dissolved in water are added and the mixture again boiled. After adding water to increase the volume to the original the mixture is boiled for a few minutes and then filtered. Chardins special papers may be used for this purpose, but the author prefers to use a pad of absorbent cotton supported by a disc of filter paper or flannel in a Buchner funnel under reduced pressure. By this method large volumes of this concentrated agar may be filtered in a short time. The lactose, dissolved in a little water, and the neutral red solution are then added and the medium placed in tubes. For ordinary use the usual quantity of 10 coms. of medium per tube suffices, but when used in the large Petri plates with 10 coms. of water, 40 coms. of medium per tube is required.

B. Coli and other lactose fermenters usually grow on this medium as red colonies which color the surrounding agar red and produce a haze. B. Typhosus and certain other members of this group which are non-lactose fermenters grow more slowly than B. Coli and produce an am-

ber or yellow hue. Some of the dysentery organisms entirely fail to develop on this medium, although they grow luxuriantly upon it when mannite or dextrose is substituted for lactose.

As described by Grunbaum and Hume, the medium is made alkaline to the extent of 0.4% beyond the neutral litmus point. MacConkey, Houston, and others who have used this method prefer to leave the reaction acid. The author has found that the addition of alkali has but little effect except that it assists in the clarification during its preparation.

The object aimed at by the introduction of this medium was the development of B. Coli and allied organisms with the suppression of the normal bacterial flora of water. Two other media have also been used for this purpose, viz.: litmus lactose agar and Endo's medium, but these are not so suitable, in the writer's opinion, for the purpose in view. Litmus lactose agar permits the growth of other bacteria in addition to the Colon group, and this tends to large errors when the B. Coli content is small. Many organisms, in addition to the colon forms, produce faint red colonies on litmus lactose agar and it is sometimes impossible to distinguish between these organisms and colon forms of low fermentative capacity. Endo's medium gives good results, but is inconvenient in routine work on account of the technique associated with it.

Plate methods have hitherto been of limited utility on account of the comparatively small quantities of water that could be used. Houston has, however, by the use of Petri dishes of large dimensions, successfully plated 10 coms. of water with Rebiplagar, and there is no reason why even larger quantities should not be employed. The increase in the quantity of water that can be plated has been of great utility as it enables an es-

time to be made of the *B. Coli* content of waters of fair quality in 20 to 24 hours. Such waters usually fail to produce gas in lactose ox bile in 24 hours, so that this method yields no evidence as to sanitary quality in that time. The chance errors of distribution and overgrowths inherent to the enrichment method affect the plate method to but little extent. The writer has used rebiipelagar with 10 coms. of sample in routine water examination for some considerable time in conjunction with the usual standard methods, and although anomolous results have occasionally been obtained, the results on the whole correspond fairly well. It must always be remembered, however, that none but vigorous types are able to reproduce in lactose ox bile, whereas many of the attenuated organisms grow well on rebiipelagar. Under such circumstances it might be expected that in recently polluted waters the results obtained by the two methods would be in close agreement and that the plate method would tend to give higher results than the ox bile method as the coli became attenuated. This is what has been found in actual practice. The closest agreement, however, has been observed in chlorinated waters; in these samples the attenuated forms have probably been entirely destroyed by the oxidation process, and as none but vigorous types would survive the two methods ought to yield identical results. A comparison of the results obtained on some hundreds of samples by the two methods agree quite as well as could be expected when the chance errors of distribution are taken into account.

Raw river waters and samples from wells which have not recently been polluted give higher counts on rebiipelagar than the *B. Coli* index calculated from the fermentation tubes. This is undoubtedly due to attenuated forms.

As might be anticipated from a general consideration of the principle involved, samples containing attenuated forms often show an increased count on rebiipelagar with increased incubation period. The colonies becoming visible during the latter periods are due to organisms of diminished reproductive faculties and are probably of no sanitary significance.

On many plates opaque white colonies have been observed; a number of these have been isolated and tested on sugar broths, but not a single one was found to be a lactose fermenter. All were dextrose fermenters. On the other hand, every red colony tested proved to be a lactose fermenter.

Whilst the author is not, at this stage, in a position to recommend the substitution of this method for the usual *B. Coli* one, he is thoroughly convinced that it is a valuable addition to the usual routine methods of water examination and can advantageously replace the usual blood heat count on agar. The latter method is of very limited utility and ought never to have been adopted as a standard method.

#### *Milk.*

So far as the author is aware, rebiipelagar has not hitherto been employed in milk examination. He commenced using this method some months ago in routine work, after a series of experiments comparing it with gas formation in lactose broth. The results showed an agreement which was quite as good as can be expected between a plate method which gives approximate accurate results and an enrichment method in which the error may be large unless a large number of tubes are used. In routine work, the determination of the number of colon forms requires the use of so many tubes that the process becomes cumbersome and unwieldy, whereas the count on rebiipelagar, using two suitable dilutions is both simple and convenient.

Three points were investigated in connection with this method of examination.

- (1) Is 24 hours' incubation sufficient for the development of all the colon organisms into visible colonies?
- (2) Are all the red colonies produced due to members of the *B. Coli* group?
- (3) Is it possible to underestimate the colon organisms by reason of their property of reducing neutral red and producing colorless colonies?

When the dilutions are suitable and overcrowding of colonies prevented the increased count obtained with increased incubation period is very small and, as in water, is due to attenuated organisms. As

milk forms an excellent medium for the reproduction of colon forms the attenuated organisms are inappreciable in number.

Of the large number of red colonies that have been investigated only two have been isolated that failed to produce gas in lactose broth. One is a diplococcus which produces a brilliant scarlet colony of extremely viscous consistency and the other a bacillus bearing a close relationship to the colon group.

The ability of some colon forms to reduce neutral red under certain conditions may, in some instances, lead to serious errors. This reduction of the coloring matter only occurs with the surface colonies and a comparison of the two different dilutions will usually enable the operator to ascertain what proportion of the colorless forms is due to *B. Coli*. In a series of over one thousand samples 8% contained colorless colonies and of these 4% were lactose fermenters. After some experience with this method the colorless colon colonies can usually be distinguished by their appearance, as they are usually more translucent than the non-lactose fermenters. The average error due to (2) and (3) above is +3.1% for (2) and -3.6% for (3). This is very small and may safely be neglected.

This method, in conjunction with the usual standard method on agar, forms a

valuable combination for routine milk examination. Milk samples taken from cows with reasonable precautions give no count by this method, so that all colon forms found in market milk are due to improper handling and lack of cooling facilities. *B. Coli* will not increase appreciably in milk kept below 50° F. for 24 hours. At 44° F. and below this temperature the colon count on rebiipelagar will not increase for days, but above 50° F. the increase is extremely rapid. Under ordinary conditions 50° F. may be considered as the critical temperature for the development of *B. Coli* in milk.

Pasteurized milk should give practically no count on this medium, as all the colon forms perish during the preheating period. The author's experience has been that pasteurization plants can turn out milk 80% of the samples of which show less than 50 colon forms per com. For ordinary market milk a provisional standard of a maximum of 1,000 colon forms per com. has been fixed until more data can be secured.

#### *Conclusions.*

For both milk and water examination the count on rebiipelagar is a valuable addition to the sanitarian's methods of examination and can safely be recommended for routine work.

### THE INSATIABLE MIND.

#### *Avarice.*

##### *Diagnosis—*

If you make money your god, it will plague you like the devil.

##### *—Fielding.*

##### *Remedy—*

Bear in mind—a shroud has no pockets.—Scotch Proverbs.

# STANDARDS WITH REFERENCE TO SEWAGE TREATMENT

By T. AIRD MURRAY, M. Can. Soc., C.E.

**W**ITHIN the last two or three years there has developed in Canada a strong desire to conserve the purity of inland waters by preventing the discharge of raw sewage effluents. Several Provincial Governments have enacted legislation making it imperative that any scheme for the sewerage of an urban district shall be accompanied by a scheme for the satisfactory treatment of the resultant sewage.

The engineer when called upon to make surveys and plans for a system of sewers finds that it is no longer the simple question of providing underground channels with suitable grades and a final effluent point into some stream, ditch or sheet of water forming the natural drainage level of the district, but that he has also to design some form of works or plant which will have the effect of so changing the character of the raw sewage that it will at least meet the requirements of a Provincial Health Department. Naturally, the engineer, before he commences to make plans for any particular design of sewage disposal works is inclined to ask the Provincial authority to state what it expects, and will insist upon this with reference to degree of purification and manner of sewage treatment. The engineer is anxious to know that his efforts in preparing plans are based upon what may be accepted lines, and that his scheme when submitted will not be rejected for non-compliance with certain standards of required efficiency.

The engineer is generally somewhat surprised to find that these Provincial health authorities have no hard and fast rules with reference to any fixed standards applying to the question of degrees of purity of sewage effluents, but that the golden rule appears to be that there is no rule.

There appears to be sufficient evidence connected with the history of sewage disposal methods and administration to warrant the conclusion that it is impossible

to adopt any general standard of required degree of purity, and that each case under consideration requires separate adjustment with reference to local conditions and requirements. The importance of the consideration of local conditions cannot be exaggerated, especially with reference to this country, where we have certain conditions which are peculiarly inherent, and are not found to the same extent in most other countries where sewage disposal methods are in vogue.

The fact, that certain methods and principles have been more or less adopted in Great Britain, Europe and the United States, and found more or less successful, allows of no definite conclusion that such methods and principles will be equally successful in Canada. To take an example—we find in Great Britain that the underlying principle which demands sewage disposal is entirely apart from any pathogenic consideration whatsoever. Methods of sewage disposal in Great Britain do not include any claim for the elimination of say, typhoid infection or protecting sources of domestic water supply. Apart from the City of London no other large British city depends upon its water supply from sources open to or subject to sewage pollution. Sewage disposal, or sewage treatment, is not enacted in order that the rivers and streams may be less dangerous from a pathogenic point of view, but merely that their aesthetic value be maintained and fish protected by conserving the oxygen supply natural to the waters. Since the question of sewage disposal has been agitated in Canada, it can be safely stated that medical men connected with public health questions have shown greater practical interest in the subject than all others put together. Generally, engineers have been apathetic and have shown little desire to trouble with a subject presenting many disputed and unknown factors. Politicians have fought shy of the question, and



have not been sure of it as a vote-getting machine. Those responsible for municipal administration have not been enamored with the idea of spending sums of money with no direct prospect of profit, and in simply doing something for the benefit of the other fellow further down the stream. Now it cannot be said that the medical health official has been actuated by his interests in fish life or to any great extent by the preservation of aesthetic values, but, on the other hand, he is directly interested in the reduction of mortality rates and the elimination of zymotic diseases. Dr. Chas. Hodgetts and others, over and over again, in referring to the necessity of legislation to prevent sewage pollution of inland waters have referred to the high typhoid mortality rate in Canada as compared with Great Britain and other countries.

In approaching this question of sewage disposal, the point of view of the medical man appears to be generally accepted by the Canadian public. It appears reasonable to assume at the present time, that, if the public were told that efforts toward sewage disposal were not calculated to guard the purity of sources of domestic water supply, were not calculated to eliminate or decrease chances of disease infection, but were merely to provide against aesthetic nuisance, it would then be very difficult indeed to obtain the passing of a by-law in favor of any expenditure in this direction.

Yet, this medical point of view with reference to sewage disposal has met with no consideration in Great Britain, with only a little consideration in Germany, but with perhaps a fair amount of consideration in the United States.

In discussing any possible standards relative to purity of sewage effluents, we must first determine exactly why we are treating the sewage, and what particular interests we are guarding in preventing raw sewage from entering any body of water.

Again, as an example of peculiar local conditions, we have our prolonged winters, during which oxygination of inland waters practically ceases and fermentative and putrefactive processes become dormant. It does appear that in approaching this question of standards we must be careful to

give full weight to general Canadian and local conditions as compared with those of other countries where certain basic and working principles have found particular favor.

The conclusions of the Fifth Report of the Royal Commission on Sewage Disposal (Great Britain), par. 355, headed "Tests for Sewage Effluents in Relation to Standards," state in part: "According to our present knowledge, an effluent can best be judged by ascertaining, first, the amount of suspended solids which it contains, and, second, the rate at which the effluent, after the removal of the suspended solids, takes up oxygen from water."

"For the guidance of local authorities we provisionally state that an effluent would generally be satisfactory if it complied with the following conditions:

"(1) That it should not contain more than three parts per 100,000 of suspended matter; and

"(2) That, after being filtered through filter paper, it should not absorb more than;

"(a) Five parts by weight per 100,000 of dissolved or atmospheric oxygen in 24 hours.

"(b) 1.0 part by weight per 100,000 of dissolved or atmospheric oxygen in 48 hours, or

"(c) 1.5 parts by weight per 100,000 of dissolved or atmospheric oxygen in five days."

Here we have a provisional general standard advised which takes cognizance only of the amount of suspended matter intercepted, and the stability of the organic content relative to its affinity for oxygen. The aesthetic nuisance is guarded against by the interception of solids, and fish life is preserved by ensuring a chemically stable effluent.

Par. 304 of the above report states:

"We observe that Commissions have reported that if all the processes which were proposed for the purification of sewage, or of water polluted by excrementitious matter, there is not one which is sufficiently effective to warrant the use, for dietetic purposes, of water which has been so contaminated, and the 1868 Commission stated that, in their opinion, 'Rivers which had

received sewage, even if that sewage had been purified before its discharge were not safe sources of potable water.' We, therefore, conclude that the framers of the Rivers Pollution Prevention Act, 1876, did not contemplate that local authorities should be required so to deal with their sewage that the rivers into which the purified sewage flowed might be regarded as safe sources of water supply, in cases in which the water was not to be filtered before distribution."

Par. 305 states: "In our opinion much the same position must be taken up to-day. Although the methods available for the purification of sewage are more numerous than when the 1868 Commission reported, our examination of a very large number of effluents from sewage farms, and from artificial filters of various kinds shows that although such effluents may be very good as judged by chemical and physical tests, they are generally liable to contain large numbers of micro-organisms of intestinal derivation, and that if such organisms are to be destroyed, or eliminated, the effluents must be subjected to some treatment additional to that which is ordinarily employed." Again, par. 309 states: "We are satisfied that rivers generally, those traversing agricultural as well as those draining manufacturing or urban areas, are necessarily exposed to other pollutions besides sewage, and it appears to us, therefore, that any authority taking water from such rivers for the purpose of water supply must be held to be aware of the risks to which the water is exposed, and that it should be regarded as part of the duty of that authority, systematically and thoroughly, to purify the water before distributing it to their customers." Par. 310 goes on to state further: "Apart from the question of drinking waters, we find no evidence to show that the mere presence of organisms of a noxious character in a river constitutes a danger to public health or destroys the amenities of the river. Generally speaking, therefore, we do not consider that in the present state of knowledge, we should be justified in recommending that it should be the duty of a local authority to treat its sewage so that it should be bacteriologically pure."

It must be perfectly clear and apparent

that if British standards are to be accepted as applicable to Canadian conditions, that there is no necessity to demand any more efficient standard of purification than may be obtained by mere screening in discharge in raw sewage into the great lakes. The ratio of fresh water to sewage is so great that dilution will prevent any nuisance either of a chemical or physical nature. Again, British standards if applied to our larger rivers will make sewage disposal a comparatively simple and easy matter to deal with.

Referring to Professor Dr. Dunbar, of the Hamburg State Hygienic Institute (Principles of Sewage Treatment, page 239): "In the case of rivers which serve as sources of water supply, attempts should be made to restrict the infection to a minimum. In the case of rivers which are not used as sources of water supply, bathing places will have to receive consideration, as well as the river population, and the fact that the water of such rivers may come into contact with food destined for human consumption, as in washing of milk pails, the rinsing of vegetables, etc. In all cases where it is a question of discharging sewage into a river, the possibility of spreading infectious diseases must be considered. In certain circumstances it will be necessary to adopt measures for the separation or destruction of the infectious germs, either permanently or temporarily." This view, as expressed by Dunbar, appears fairly to represent the medical health point of view in Canada. Is it the correct view? Are our conditions here in Canada of a nature that they demand an entirely different general standard of purification from that accepted in Great Britain? The author of this paper has always shared this view, which he takes the liberty of calling the "Canadian Public Health View."

George W. Fuller, in a recent publication, "Sewage Disposal," states page 213: "Theoretically the treatment of sewage should not be made so complete that the sanitary benefit derived therefrom is incommensurate with the cost involved. Fortunately there is now available by the hypochlorite method a reliable means of disinfecting sewage or water at a small cost. The full significance of this is not yet fully appreciated. It has much bear-

ing on the question of sewage disposal in general and on the dilution method in particular."

Until recently methods of disinfection of sewage effluents have been considered prohibitive with reference to cost, and it has been very generally agreed that it is cheaper and more effective to purify a water supply than attempt to remove the pathogenic impurities from sewage. After extensive experimental work, Prof. Phelps has been able to some extent to crystallize this subject and show that practically efficient disinfection of sewage effluents is economically possible. He has shown that practical disinfection may be obtained by the use of an average of 8 parts per million of available chlorine with settled sewage, 13 parts with septic effluents and  $3\frac{1}{2}$  parts with sprinkling filter effluents. Chloride of lime in large orders costs about 1.15 cents per pound. The lime contains on an average about one-third of available chlorine. Thus one million gallons of settled sewage requires about 240 pounds of chloride of lime, a septic effluent about 390 pounds, and a sprinkling filter about 105 pounds. Where average domestic sewage is treated fresh, septic conditions avoided and the rate of filtration on sprinkling filters is about  $2\frac{1}{2}$  million gallons of sewage per day per acre of filter, and six feet four inches in depth, and the after humus is settled out, the author has data evidence that practical disinfection can be obtained by the use of 60 pounds of chloride of lime per 1,000,000 gallons of sewage treated. The annual cost in the above case for lime would be about \$800 per annum.

It would appear then that, other things being equal, there is no economic objection to the Canadian Public Health point of view, that a standard of sewage effluent purification should insist upon disinfection where the effluent enters a domestic source of water supply, or a water source which comes in contact with boatmen, bathers and others.

This question in relation to standards, viz., the requirement of a chemically stable effluent or a disinfected effluent is likely to form one of the main points in any discussion between this country and the United States in relation to the pollution of boundary waters. It is, therefore, rea-

sonable that our position be clearly defined in relation to our own local conditions.

There is an evident tendency in some quarters to accept the British point of view, and throw the whole responsibility of pure water supply upon those delivering the water and ask for only partial or physical treatment of sewage. The argument in favor of the British point of view appears to assume that a condition of water supply will eventually prevail by which every drop of suspicious water used for domestic supply will be efficiently purified. Such an ideal condition would certainly be welcomed, but is it possible to attain? The argument is also used that by disinfecting sewage effluents, you create a false impression of security, as there are uncontrollable sources of pollution apart from sewage discharges, and that municipalities relying upon the effect of disinfection of sewage may delay or refuse to purify domestic water supplies. The author's opinion is, that in the light of modern economic methods of sewage disinfection, both methods of precaution should be taken wherever practicable. It is not a question of the one method of precaution against the other. Large towns and cities can afford to install water purification plants. Small towns, villages, summer residences by lake or river shores, individual farmers, boatmen, bathers, etc., may not be in the position to take efficient measures to counteract the sewage infection of their only available source of water supply.

The use of the term uncontrollable infection or pollution is to some extent misleading, and much that is looked upon as uncontrollable can by legislation be efficiently controlled. Refuse and sewage matters from ships may be here included. Storm water discharges from streets and inhabited areas may be collected in stand-by tanks and disinfected. What may remain in uncontrollable pollution is an extremely small factor as compared with the millions of gallons of sewage containing millions of intestinal bacteria which are constantly being discharged into our sources of water supply. The argument that, because 100 per cent. efficiency cannot be obtained, we should not attempt a ratio of efficiency, is an argument which if applied to other matters would cause all endeavor to cease.

Conditions in Great Britain do not appear to demand the same standard of sewage treatment efficiency as they do in Canada. Great Britain, owing to a comparatively equable climate, and a high rate of rain precipitation, is able to collect and store its rainfall in districts which are free from chance of sewage pollution. That country is not dependent on its rivers and waterways for domestic water supply. On the other hand Canada has a comparatively low rate of rain precipitation, demanding large catchment areas and storage of water, subject in the summer months to hot and continued sunshine, productive of algae and other vegetable growths; in the winter time to a thick ice covering, cutting off the supply of atmospheric oxygen and retaining the gases and products due to vegetable decay. On the other hand Canada has many fresh waterways, great lakes and large rivers, which form and must continue to form the main sources of domestic water supply. Can this country afford to allow the Great Lakes, the waterways and rivers to become so bacteriologically impure that it is absolutely necessary that every drop of water be treated and sterilized before being used for dietetic purposes. In Great Britain and in most parts of the United States the rivers have become so hopelessly impure that the destruction of the sewage bacteria would probably make very little difference one way or the other. In Canada this hopeless condition of things has not yet occurred, and it appears that we have an opportunity now of checking any such possibility by adopting such standards with reference to sewage effluents which best fit our local conditions.

In this Province we have two large rivers, the North and South Saskatchewan, other streams are small and to an extent present very little and at times no flow in the summer. The two great rivers will probably in the future form the chief source of available domestic water supply. The creeks and smaller streams will probably be dammed, so as to conserve as much of the spring run off as possible, and will be used for both cattle and domestic water supply. Several cities and towns throughout the Province have adopted systems of sewage treatment, and in every case where

the effluents discharge either into the large rivers or the smaller creeks, the system of sewage treatment has been directed so as to obtain a practically sterile effluent. In the case of the smaller creeks stable chemical effluents, followed by disinfection, have constituted the accepted standard, in the case of the two large rivers, well settled non-septic effluents, followed by disinfection, have been generally admitted as sufficient. In the latter connection, however, it is sometimes well to consider the comparative capitalized cost of filters as against the extra chlorine required for a merely settled effluent.

In connection with the City of Lethbridge, the author had occasion to go into the question of the cost of filters as against the extra cost of chlorine for treating a merely settled effluent. Works were planned for 20,000 population, producing a daily discharge of about 2,500,000 gallons per day. It was found that in order to obtain a fair percentage of disinfection, 10 parts of available chlorine per million were required for fresh sewage liquid after 65 per cent. of the solids were removed by two hours precipitation. At 1.5 cents per pound, the annual cost of the lime came to \$4,000. After the settled sewage had been passed through a trickling filter of broken stone at the rate of 150 gallons per cubic yard of stone per day, and the resultant humus settled out, efficient disinfection was obtained by the use of 2 parts per million of chlorine, costing \$800 per annum for lime. The difference in annual cost for lime represented at 5 per cent. a capital sum of \$64,000. Filters were put in and completed at a cost of \$30,000, producing a capital saving of \$34,000 by adopting disinfection after filtration.

While the author does not think it expedient or even possible to lay down any definite standards with reference to degrees of purity of sewage effluents, and considers that each case must be considered on its merits, he is, however, convinced with the evidence that he has at present before him, that the generally accepted standard of purity should include the removal of intestinal germs whenever the sewage has finally to pass into any water source which may by any chance be used for domestic purposes.



# SOME DIFFICULTIES OF MEDICAL OFFICERS OF HEALTH IN TOWNS AND RURAL COMMUNITIES

By T. W. VARDON, M.D., M.O.H.

Galt, Ontario

I AM to speak to you on "Some of the Difficulties of Medical Officers of Health in Towns and Rural Communities," and this I will do briefly.

These difficulties are practically the same as those of the Medical Officers of Health in larger communities and cities. It is only a matter of degree. The Medical Officers of Health have to deal with human nature, and human nature is the same the wide world over. How to induce men and women to take a really serious view of matters pertaining to health, especially when any proposed undertakings mean monetary outlay, is usually the proposition in a nutshell. The City Medical Officer of Health may have an advantage over his rural brother in that his constituents have their faculties developed to keener condition because of their environment, and also because the large city daily newspapers are most alive to questions of public health and lend their aggressive co-operation to movements of reform, but in all other respects the work is much the same.

I have found that one of the chief difficulties Medical Health Officers in towns experience lies in inducing house owners to make connections with sewers. Making ordinary connections in houses that were built before the sewer system was installed, not to mention the installation of bathroom, closets, etc., undoubtedly entails a considerable expense on the owners, and is unquestionably a hardship in many cases, where families have small means, and here is where the Medical Officer of Health must exercise tact. The screws may be tightened gradually, but they must be tightened firmly. It is the welfare of the community that must be kept in mind, as well as that of the individual. We must build up healthy normal conditions of existence, and so increase the power of resistance to all forms of evil. Constant education of the people must be employed.

Where there is no regular system of garbage collection it is, too, very difficult sometimes almost an impossible matter to induce every householder to keep his premises in a sanitary condition. I strongly advise the installation of a garbage collection system in every community, even in small villages. You all know the danger of disease which lurks in every deposit of garbage, and it will well repay every village and town to have a garbage collection system paid for out of the general taxes. If it is on the individual payment plan, it is too often neglected, and thus a whole street may be endangered in health through the negligence of one of its residents.

When a waterworks system has been introduced, the closing up of old wells is another source of opposition to the work of the Health Department. In small communities everyone knows everyone else, and it may mean almost a life feud for the Medical Officer of Health to arbitrarily compel the closing up of every well. This, too, must be brought about gradually and calls for tactful but firm compulsion.

When we come to the question of the enforcement of regulations regarding infectious diseases, I must say that a long step forward has been made during recent years. Only a very few years ago it was very difficult to secure the registration of an infectious disease. People strenuously objected to their houses being placarded, and to undergoing a quarantine when a quarantine was necessary; now, however, that the reporting of such cases is incumbent upon the medical practitioner, and with the increased knowledge on the part of the public, there is very little difficulty in this respect, I am glad to say.

As new regulations come into operation, Medical Officers of Health find it difficult to enforce them quickly. It takes time to get any new idea appreciated; for example, the Health Act as amended lays down



what butchers are not to do. They are not to have their slaughter houses within two hundred yards of any dwelling; nor to keep animals of any kind within that limit; to leave windows or doors of the abattoir insecurely fastened, or unscreened during the summer months, nor to feed offal or blood to pigs without first boiling it. We find the butchers slow in conforming with these commendable regulations, but we are getting them into line by dint of close inspection.

In the medical inspection at public schools, and in securing of instruction in the schools along lines of sanitation and hygiene, progress is slow. The cost of the service is the chief difficulty in rural communities. If parents knew how essential to health and progress in studies it is that their children's tonsils should be kept normal; their teeth clean and free from decay, their throats healthy, proper glasses prescribed where eyeglasses are needed, etc., they would become most enthusiastic in this direction. Deformities, too, are often easily corrected in youth, which, if left alone, sadly deteriorate the earning power of the individual in adult life. Under a proper system of inspection in public schools many such deformities are discovered and promptly treated. Fostering the power of the individual to provide for himself throughout life, in health or in sickness, in youth or in age, should ever be the aim of the Medical Officer of Health in dealing with the children in the schools.

The inspection of dairies, fruit stores, etc., is now recognized as absolutely essential to public health, and in the main the health regulations are pretty generally observed. The careful inspection of milk

supply is a most important branch of the work. Canada has a very high rate of infant mortality, far above the English standard. This should not be, and it need not be.

To have the active co-operation of the medical profession working in harmony with the departments of health, contributes to make the work of the M. O. H. easier and more efficient. The Medical Officer of Health should use his best energies to keep in kindly touch with the profession at large. The medical men believe they have a serious grievance in that they are compelled to report all contagious diseases as well as births and deaths, for which they receive no fee. To my mind, this is an injustice; I believe that full reports of contagious diseases will not be made until this is rectified and a moderate fee paid for the services rendered. If we had no difficulties to overcome life would not be worth living. The profession will have to keep fighting away until they get what is justly due them.

In conclusion, let me point out that the national health of a people lies in the life and habits of the people. Medical Officers of Health are working to make the homes of the people of the country healthy, happy and contented; to surround them with every influence which contributes to length and wholesomeness of life. In such work real patriotism lies, and I trust that from this gathering we will each and all receive inspiration which will tinge with a consciousness of lofty endeavor every effort we make from day to day to stimulate and encourage our constituents to the cheerful observance of the prescribed regulations for the maintenance and preservation of public health.



# CONSERVATION OF CHILD LIFE

By J. J. KELSO

*Superintendent of Neglected and Dependent Children of Ontario*

**L**ET us not have too many organizations and too little organization! The rights of the child are now so fully recognized and conceded that there should be a concerted effort made to develop efficiency and co-operation among the various societies engaged in child-protection work.

When the first comprehensive Children's Protection Act was drafted it was intended that the Children's Aid Society should be the official body under which would be grouped and promoted the philanthropic activities of the State, the municipality and the benevolently inclined. This intention has not been realized as yet, partly because so much pioneer work had to be done, and partly too because of the somewhat natural desire of philanthropic workers to be independent and unhampered in carrying on their particular branch of social service. But however difficult it may be to bring it about, there will never be a satisfactory solution of the child problem until there is in every community a central executive or council to which all societies will own a ready allegiance. Possibly a good plan would be to organize a Child-welfare Council representing the chief interests engaged in the work. The field is so extensive, the specialized organizations are so numerous, the different movements are so closely allied, efficiency and economy of administration are so essential, it is so important that one branch of work should not unduly predominate to the injury of the other, that no valuable branch should be overlooked, that the results should be carefully gathered up and given proper publicity. Surely no one can reasonably doubt the importance of united and harmonious effort!

While it is difficult in a brief survey to include all the subjects that might

properly be considered and supervised by a community child-welfare council the following are some of them:

The preservation of home life; study of industrial conditions; cost of living; wages, housing, slums, recreations, public ownership, and co-operative stores.

Infant life—environment of prospective mothers, infant feeding, illegitimacy, disposal of the illegitimate child, infants' homes, children's hospitals, day nurseries.

Defective children—medical inspection, a free dental service for the poor, segregation of the feeble-minded, suitable institutional care for the handicapped.

Normal children—radical changes in the public school system; giving prominence to industrial instead of mental training; facilities for enabling young people to secure congenial employment; counteracting the evil influences of street life on children; regulating the attendance of children at doubtful public entertainments; providing numerous supervised play centres for children.

The neglected child—bringing good influences to bear on careless parents; proper staff of Children's Aid inspectors to prevent neglect and ill-treatment of children, a children's shelter in every community, with medical, dental and psychological examination.

Homeless children—placing all such in family homes, and only using the institution for temporary care.

Delinquent children—complete separation from ordinary judicial procedure, careful investigation as to character, homes, companionships, temptations, and child's aspirations, patient and continuous supervision, segregation from other delinquents, avoidance of institutional treatment if at all possible.

The broken home—constructive work; prosecution of deserting father, social and church agencies to restore conjugal felicity and good living; judicious aid to worthy widows with children, helping to secure home employment, providing friends for the friendless and promoting neighborliness.

Other lines of work will readily sug-

gest themselves, and if all who are engaged in the noble cause of child protection and in securing and maintaining youthful health and happiness will put aside personal prejudices and meet together to honestly consider wherein better results may be obtained, then both the country and the child are bound to materially benefit and prosper.

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## THE WORLD WAR

John W. Garvin.

Vast hosts of armed men are aflame  
With hatred and murderous lust,  
And Civilization's a name  
Half-buried in ruins and dust,  
While check-mating kings play the game  
Of envy, vain-glory, mistrust.

Death still is the wages of sin:  
The dead lie in winrows like corn;  
All hell with its thunderous din  
Is loosened afresh every morn;  
While homesteads and quivering kin  
Are desolate, drear and forlorn.

Thou Infinite Breather of Stars  
That jewel Thy Face in the night,  
Protect with omnipotent bars  
Thy manifest selves in their plight;  
Forgive ineffaceable scars,  
The wounds of inglorious fight.

## CHRONICLES "EN ROUTE"

### IN JAPAN—HIGH AND LOW

By FLORENCE J. WITHROW, B.A.

**M**IYANOSHITA, our next Eden, is one of the beauty spots of Japan.

To reach it we motored fifteen miles from the main line, passing on the way a Buddhist funeral. The coffin, covered with red cloth was shaped like a high chest, the body being in sitting posture. Heading the procession were a dozen boys in fantastic dress, each carrying a silver tinsel lotus. These altar symbols are sometimes very beautiful, often of finely wrought silver, brass or bronze.

screeching his siren rushed right on. When we realized it was a funeral we fell aghast at our unseemly haste, but, alas! could not remonstrate with our smiling little driver, as his knowledge of English was confined to "gut day" and "bootful mounting." Later we learned his persistent tooting was to help banish evil spirits, by augmenting the customary funeral noise.

We have been privileged to have many glorious mountain drives, but never have we had one with such variety of verdure.



BEHIND IRON BARS

Next followed women mourners in white garments and flowing veils. The casket was borne on a white bier by strangely dressed men with covered faces. Immediately behind walked Buddhist priests in fawn colored robes and curious sieve-like hats, each carrying a book and chanting dolorously. Then came a band of wierd-sounding instruments and lastly men mourners trudging along on noisy clogs.

At sight of the glittering flowers we exclaimed, "Oh! a wedding! Stop!" but the chauffeur, tooting his horn and even

Every shade of green glistened on the mountain sides. Spring has no fresher tints than those with which she glorifies the trees, shrubs, mosses and tangled vines of Japan.

A terraced slope, set with shrubs and an exquisite porcelain fountain with darting gold-fish leads to an ideal mountain hotel. The entire front is of glass, behind which are sun parlors and conservatory. Five ruddy grate fires burned in the cosy rest-rooms. Easy chairs, covered with rose chintz invited us to lounge. We thought

we had foresworn European chairs and sofas, but succumbed to rose-pink upholstery and were soon ensconced in "pillow" divans reading a magazine tribute to a tender hearted man—W. T. Stead, whose London Memorial is the Stead Hostel Movement. It is said no man knew better than he the sorrows of suffering womanhood in England.

Next day brought us the grandest trip of our tour. In bamboo chairs, borne by four coolies we threaded by-paths in mossy woods, crossed rustic bridges, followed rushing torrents and rested by noisy cascades. Along terraced slopes were fresh fields of rich red soil. We tarried at tiny tea houses where sickly pale green tea was offered. The Boys' Festival Day, May 5, being near, gayly colored paper carps were flying. The custom is that wherever a baby boy or sturdy lad blesses a home, there will fly the paper carp, signifying that the boy must surmount obstacles as does this brave fish.

Of course, Sedan chairs wobble, but what matter if bearing one to heights heroic! Sheer up the mountain were we carried, above the trees, along jagged and perilous ledges, far up to bare and precipitous peaks. Sulphurous fumes issued in clouds from rocky caverns. Had we reached the confines of the Nether World? On foot we climbed over sulphur stained rocks and scalding rills to the summit. If Inferno lay below, Paradiso was surely above. What a scene spread beyond! A mirror lake shone in the near valley and far, far above loomed the white cone of Fujiyama. We were 5,000 feet high and Fuji 13,000 feet and distant only 20 miles.

Like a "sign in the Heavens" appeared this luminous crest. It suggested the Scriptural Great White Throne and the King of Glory on High. After hanging thickly for an hour, the clouds slowly receded and revealed this peerless mountain. We murmured "Unfold, unfold, unfold ye Portals Everlasting!" Never have we had so apocalyptic a vision. Standing opposite one a lonely hill top, Fujiyama, the sacred mount, brought us near to the heart of the Innermost. Sublimities of nature wondrously reveal the Eternal—the Mighty God, the Everlasting Father.

On the morrow we had another view of Fuji in the trip to Hakone. Some of the party sped along the well-engineered road in a motor car, but three of us stuck to the Sedan chairs. Personally we essayed the Kago or swinging hammock, but at intervals crawled out and stretched our cramped limbs by walking. Kagos are all right for children and pigmies, but not for grown ups, whose legs must either curl up or dangle down.

The reflection of Fuji's snowy summit is mirrored in the still waters of Lake Hakone. Unfortunately the lake was ruffled during our sail, however, the white crest shone in dazzling radiance in a clear sky.

At Nikko we found no Fuji nor anything to compare, yet the mountains are of special beauty. Rikishas took us over the hills to a lovely waterfall. Here was spread another blossom land. Being so far north spring was still young and the wild pink azalea in full bloom. Our return at sunset can be better imagined than described, sky and hillside being aglow with pink.

A more adventurous trip was taken next day. By rikisha we climbed 4,000 feet to Lake Chuzenji, then on to Yumato, the end of nowhere. Here the trees were leafless, and silver grey the prevailing color of the forest. Not even a bud showed on any bush, save the prodigal bloom of the azalea. Snow lingered by the wayside and the roads were soggy and the air chill. We felt like a lone explorer in a desolate north-land. It was late afternoon when we reached the primitive inn. Tidy maids brought to each room a tiny brazier with microscopic coals. Bright little Miss Geraldine Millard remarked that her roommate "coolly" appropriated her brazier but, she added, that she sat "coolly" enough beside it trying to imagine heat, though feeling none. Most of the party were recompensed for the "fireless heaters" by a hot sulphur bath, and a ton of quilts wadded a foot thick more or less. The crisp fresh air of the following morning and the warm sunshine made the return journey a joyous descent.

Next day a perfect morning of still air, cool atmosphere, and glinting sunlight, helped make our pilgrimage to Nikko shrines an ideal experience. A Japanese



proverb runs "You cannot say "kikko" (magnificent) until you have seen Nikko." There is truth in this as to the mighty trees and magnificent temples, but not as to mountain grandeur. The forest giants are cryptomerias 300 to 500 years old. Leading to this sacred region is an avenue 18 miles long of these famous cedars standing 250 years. They were planted by the poorer dyamios or governors as their offer-

quer takes a polish like marble and is as hard and cold as granite. There it stands exposed to the rain and snow of centuries. We wondered why it was not under cover, but one could hardly put a temple in a glass case. Some of the detail on gates, doors and frieze we think, should be under glass for it is as superb and delicate as on any indoor cabinet and the broad panels shine like ebony.



PARADE AS QUEENS

ing toward the Shoguns' temples and tombs, since they could not afford to contribute costly gifts. To-day their tribute stands in silent majesty dwarfing the decaying temples at their feet.

Some of these shrines are under repair costing \$200,000. The fine carving and plain surfaces are all scraped of the original lacquer. We fear no one can form any idea of this work who has not seen it. The lac-

The Shogun whose tomb especially attracted us was the great Ieyatsu, the powerful warrior, dynasty founder and builder. His tomb stands high on the mountain side, encircled by immemorable cedars and approached by a long, long flight of stone steps, moss grown and hoary. The sunlight glistened through the trees and glistened on the leaves and lichen. We tarried on the mouldy stair to gaze and reflect

upon the rare and hallowed beauty of this ancient forest sanctuary.

In spite of its loveliness we confess with shame that we did not re-visit the temple groves but devoted much time to the alluring shops in the village, which are positively magnetic and ruinous to the purse. We can emphatically say we know of no land in which there are so many delectable things to buy, and all hand made—bronzes, brasses, silver, ivory, jade, culture pearls, lacquer, wicker, porcelain, cloisome, damascene, silks, embroideries, furs, toys, pictures, paper trifles, flowers and rice confections. Even tailors' work should be included, as it is remarkable what smart gowns at ridiculously low prices are turned out by Tom Choo, Lung Chang and his kin, for the sartorial art is monopolized by Chinamen. It seems ludicrous to think of them reproducing French models, but they can do it, and feminine vanity often seeks the Chinese "modiste" when the feminine should be "doing the sights."

Our stay in Tokyo was all too short, for the capital is vast in extent and numbers two million people. Many streets are wide and there are a few splendid boulevards and park squares. The government buildings and the embassies are in European style. The Imperial Palace was a surprise. It is larger than our Buckingham Palace and has a more imposing facade. The heavy iron fence is more ornate, but lacks the British gorgeous gilding. A splendid avenue leads to the main approach. The royal moat is a charming feature, containing aquatic plants and grassy slopes set with shrubs and flowers.

Three of the finest gardens of our trip were visited in Tokyo—the azalea, the wistaria and the peony,—where billions of blossoms were in fullest bloom. Floriculture is another Japanese art. Unique are their little dwarf trees, whose process of stunting is a national secret.

A creditable Exposition was in progress in Uena Park to celebrate the coronation year. The best feature was the electrical illumination. We smiled to think of this so-called heathen nation, disporting itself precisely as westerners with loop the loops, and flip-flops. The funny little kimono people "clogged" along the festive Mid-

way with its intermittent fairy lights, or ventured upon the wistaria bowered escalator—West and East a-strangely meeting!

Because of our moral protest may we mention the saddest sight we have ever seen. Some may think it Puritanical piety or prudish morality to call this the saddest of our life. Yet to all who hold these things as high and holy, and who deem nothing more sacred, what sadder sight than to see 3,000 girls in one section of a great city selling themselves for shame. The sight was gay and pretty, but surely pitiful. There they sat like animals in a cage, behind iron bars. Their three storied houses are among the best in Tokyo, and their streets by far the most festive with myriad lights and lanterns. Every evening they bedeck themselves in cheap finery, with an astounding coiffeur, and sit powdering and rouging their faces or smoking and enticing the passer-by, sometimes a mere lad. In each cage are two men with open tills selling tickets, but for no entertainment, as these girls are required to neither dance nor sing. Their lives are absolutely idle, save for ignoble use, for no work is assigned them. Think of this hideous waste of womanhood!

Under contract for several years they are not allowed out, except twice a year when they parade the streets as queens in gorgeous attire. That some are innocent, knowing no higher morality and are selling themselves for their parents' sake, to whom their purchase money goes, does not lessen the sin of this infamous traffic. Whatever may be one's attitude toward licensed evil, either as preventive or subversive of social morality, the eternal laws of God are unchangeable and vice is a monster even though "endured, pitied and embraced," and the wages of sin is death. How dare a government or an individual traffic in the most holy functions of a human being, and thus denude these poor deluded daughters of Japan of their right to produce a pure and noble race. They who should be the nation's mothers, teaching virtue to their daughters and honor to their sons, there they sit. Tell us, is it foolish to shed a tear. May God teach the human breed in all lands that "self reverence, self knowledge, self control alone lead life to sovereign power."

In Japan the missionary has work and is nobly doing it. The records of the Union Churches, of the Y. M. and Y. W. C. A. are most encouraging in spite of what the pessimist or unknowing tourist may say. The Canadian Methodist Girls' School in Tokyo, established over 30 years has spread inestimable influence. We had the pleasure of seeing this large, well equipped building and of meeting Miss Hargrave and Miss Annie Allen. The former is honored with 25 years of Christian educational work in Japan, and the latter is a clever Victoria College girl. Were it not worth while would these astute and gifted women and others like them bury talents in a napkin. Ninety per cent. of the volunteer missionaries to-day are university graduates. Let anyone not in sympathy with their work learn facts—and further let him contemplate the infinite power of God.

In finishing this fragmentary sketch we make a "pot pourri" of miscellaneous things. We realize that much has not been touched but nothing short of ten quartos would adequately describe this unique land.

Some thought that we overestimate Japan's natural beauty as the mountains are not immense nor the scenery sublime. But each scribe must write the thing as he sees it. The country is undeniably beautiful and there are plenty of wild gorges and deep valleys into which the traveler penetrates. He can climb by rikisha or chair to heights which, except on foot or horse he could not in Switzerland, for the reason that no such easy mode as human manual or pedal power is known. When we first used the "human ponies" we were tender hearted, but alack! we too grew inhuman and suffered poor thin coolies to lug and tug us up 5,000 feet. They did the suffering for we sat comfortably in bamboo chairs feeling like Oriental queens.

One disappointing feature in Japan is the monotony in towns and cities. The buildings are uniformly low and wooden with little architectural worth. But a Japanese town is a mine—gems are there which must be sedulously sought. Temples and grounds, parks and gardens are treasure spots. Pretty private gardens are miniature Edens. Here incongruous elements of landscape are artificially arranged, mak-

ing a happy valley with toy-like mountain and vale, rivulet and cascade set with crescent bridges, pagodas, lanterns, torri, etc.

Japan is thoroughly modern in its Press. Tokyo has eleven daily papers, Kyoto six, Yokohama four, Kobe three, with English sections, and local sheets are published elsewhere. Newsboys carry bells, and jangle through the streets in merry fashion. They deliver in the suburbs running miles along country roads. Everywhere are evidences of western ways such as electric lights in every village, huge signboards in the fields, the name of each station in English, also the mileage and points of interest in the vicinity.

Primitive conditions obtain also. More fields are dug by spade than ploughed, seeds are hand planted, and crops harvested by sickle. More loads are drawn by human power than by horse or oxen. Women toil in the fields and labor on the roads. They carry sand, stone and cord wood on a curious ladder fastened on their backs. Also the traveler's impedimenta is borne up the mountain in this way.

Nearly all hotels provide kimonos and slippers for guests, in native inns invariably so, as the thick wadded kimono forms part of the bed covering. Pleasant attention are shown in mountain resorts. Lantern boys ran out to meet us and the little bazaars waved yellow lights as we hurried by. In our rooms were fresh flowers and a cosy fire was kindled night and morning.

Shopkeepers spoiled us by sending seductive wares to our rooms, nonchalantly saying "keep them." They made for us special jewelry and furs and dyed bales of silk to suit our fancy. We felt fairly like royalty. They parcel things so daintily one dislikes to untie the string. A special etiquette is observed in wrapping gifts. These are folded in various pretty papers, then laid on a tray and covered with silk or tinsel, the cloth and the tray being sent back with a trifling return present. Japanese convention and politeness knows no limit. To hand a caller a tissue paper handkerchief is good manners. Even elegant ladies wipe their dainty little noses with fine paper.

Paper making is one of the Japanese most ancient arts. One may assume they understand it, since for centuries they have

used paper for walls and lanterns. What a soft gauzy light is emitted from these glow-worms, also how fairy-like are the filmy kites and balloons! The big rainy day parasol is of oiled paper. In a deluge one morning we were glad to discard our black umbrellas and each sally forth under the ampler shelter of a huge yellow one, bearing the hotel name in monstrous letters. We felt like street walkers advertising a circus or a new stove polish. Lacquered paper is used across the rainy day clogs to protect the soaked feet. These clogs are the best things for mud ever invented, only the wearer must feel "en stilt," as he is

of this society diffused throughout this awakening nation may not a deeply moral and spiritual people yet result, for the Japanese are by no means a primitive but an individual and highly developed race.

With self-sustained lamentations we quitted our fairy kingdom. Our good guide, philosopher and friend, Mr. Suzuki presented a huge basket of flowers and with our rikishas packed to the brim, hurried us to the steamer. He admitted he never had a bunch of ladies more be-parcelled. Our staterooms looked like a parcel office with the overplus of packages for no trunk would begin to contain the various pur-



UNDER THE CHERRY BLOSSOMS

stilted up three or four inches off the ground. A "Jap" in the rain is a ludicrous sight with paper umbrella, paper cape and high water clogs. A carter or gardener wears a straw door mat down his back or a grass cape.

The Japanese recently formed a National Moral Improvement Society. The papers were full of it. Subscriptions for over a million dollars had come from the nobility and others. These public spirited men see the necessity of raising the national ideal of life. While the nation is united in patriotism it has no set standard of public conscience. With the precepts and morals

chases from bronze Buddhas to toy dolls. Again the Pacific Ocean did not belie its name and showed only a little "sea" for a few days. The Empress of Japan made the voyage in thirteen days. Had we been on the large Empress of Russia as we first planned the passage is only ten days. The magnificent new C. P. R. Pacific steamers are the latest word in shipbuilding, and sustain our Canadian Line's high reputation. We are proud to state that our C. P. R. Empresses are used by millionaire travelers from New York, Chicago and other large centres, as the shortest route across the Pacific.



Our Journal went on the press last month, and was published on September 1st, with the fullest assurance that it would be in the hands of the delegates in Fort William and Port Arthur on Sept. 10th. What was our surprise to receive a postal with this inscription:

**IMPORTANT.**

Owing to the unsettled conditions due to the European War, it has been regretfully decided to cancel the meeting of the Canadian Public Health Association which was to have been held in Fort William and Port Arthur, September 10th to 13th, 1914.

Yours very truly,  
R. J. Manion, M.D.,  
Pres. Thunder Bay Medical Association.

We could not understand it. After the lapse of nearly three weeks we still cannot understand why this important congress should have been annulled. Everybody has not gone from Canada to the war. The business of the country must go on as usual and we plead for a sanity of outlook at this present hour. We cannot help feeling that the Canadian Public Health Association could have set the pace. As it is we are indicted as among those who cannot keep their heads. Harold Begbie expresses our thought thus:

There's a man who fights for England, and he'll keep her still atop,  
He will guard her from dishonor in the market and the shop,  
He will save her homes from terror on the fields of daily bread,  
He's the man who sticks to business, he's the man who keeps his head.

Let the foe who strikes at England hear her wheels of commerce turn,  
Let the ships that war with England see her factory furnace burn;  
For the foe most fears the cannon, and the heart most quails with dread,  
When behind the man in khaki is the man who keeps his head.

Brand him traitor and assassin who with miser's coward mood  
Has his gold locked up in secret and his larders stored with food,  
Who has cast adrift his workers, who lies sweating in his bed,  
And who snarls to hear the laughter of the man who keeps his head.


Let the poor man teach the rich man, for the poor man's constant strife  
Is from day to day to seek work, day by day to war with life,  
And the poor man's home hangs ever by a frail and brittle thread,  
And the poor man's often hungry, but the poor man keeps his head.

When the ships come back from slaughter, and the troops march home from war  
When the havoc strewn behind us threatens the road that lies before,  
Every hero shall be welcomed, every orphan shall be fed,  
By the man who stuck to business, by the man who kept his head.


The Canadian Public Health Association will meet again in Congress when the war is over, but we are certain that we shall look back to the cancellation of the 1914 Congress and regard it as a colossal error of judgment. Now, if ever, a National Health Congress would appear to be a necessity.



We are thankful these days for victories and for the courage of our British troops, but how anyone can love war is **The War** more than we can understand.

During the last month as the nations have been in conflict, and we have realized the tremendous toll of human life exacted by the God of War and the devastating cruelty of the German army, we have been more and more convinced that all people should hate war. But war is here. We cannot help it now. If the world will allow a madman to sit upon the throne of one of the greatest of the nations, the world must accept what is now taking place as a just retribution for its tremendous blunder. An armed peace! Surely never again will thinking men trot out that delusion for inspection. But war is here. Canadians have buckled on their armor in the cause of liberty, freedom and righteousness. Let us hope that it will also prove to be in the cause of disarmament and a greater and grander sanity of government. This greatest war will be, must be fought to a glorious finish. Canadians will have to go, will be glad to go. Those at home must work that those abroad may fight. And above all we need at this time a sanity such as we have never needed before. Confidence, courage, co-operation. These three. 

We walked down the Midway at the Canadian National Exhibition. There, standing in the chilly raw September air was a shivering piece of humanity, possibly three feet high, dressed in a nondescript skirt and blouse. The hair on the bullet head was clipped close save for a wisp about four inches long, where the forehead and hair-line meet. Beside this piece of humanity stood a big, brazen creature named in exhibition parlance a "spieler," who ever and anon twisted in his huge fingers the little wisp of hair and expatiated on the "merits" of this little creature and others in the tent behind to amuse and gratify an itching public. This creature was nothing more or less than a common idiot. Let us say here that it is nothing short of a national disgrace for such exhibitions to be allowed admittance to the greatest show in North America. The manager of the Canadian National Exhibition is a physician. Where are his eyes? Where is his sense of the fitness of things? Is this the

kind of thing displayed for the education of our children? Do we hold up such examples to those mothers who are to rear us an Imperial race. Shame on us and on our Canadian civilization if we allow such spectacles. Alas, this was only one, and not the worst. 

Some day fire may come to the best of us in the best regulated households. But

there is no rhyme or reason **Safety First** in bringing this evil day if we can prevent it. Some

thoughtless person or some malicious scoundrel may set fire to our cherished possessions, but we being neither thoughtless nor malicious will take heed that we use only those things in our household that bear the stamp of "Safety First." In a recent issue of a well-known publication there appeared a list of timely don'ts in the interests of fire prevention. One was:

Don't buy ordinary matches. Safety matches are just as cheap.

And again:

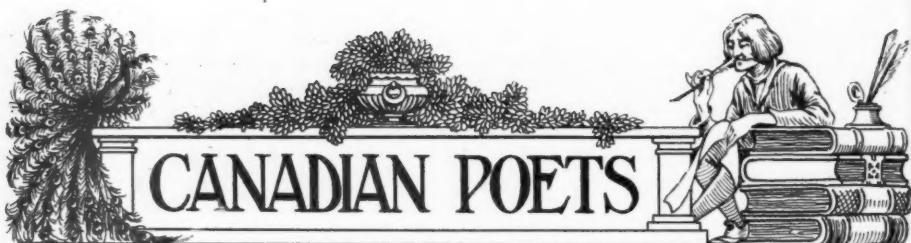
Don't fail to see that used matches are harmless before being thrown away.

We could add another:

Don't buy matches which will light easily if trodden upon.

If you buy and use Eddy's "Safety" matches you will have no need to bother your head with a list of don'ts for these are safety matches in the fullest sense of the word. They will light only on the box. They do not splutter or flare. The heads will not drop off. Really now what more do you want. And down in a big factory at Hull they are making them every day but Sunday.

In public buildings where a lot of people are confined working, working, working, there ought to be a number of round-bottomed fire pails, so constructed that they cannot be placed in any odd spot on the floor where no one can find them in the confusion attending a fire. These pails should be made to stand or hang in racks. The racks would prevent them being knocked over and they would always be in place. If made of fibreware they could be kept full of water all the year round and never rust nor leak. If flames break out John and James, Marie and Sadie know where to go for the true preventive, water. Down at Eddy's, in Hull, they are making pails just like we have outlined, and they are some pails.



## VII.



### ETHELWYN WETHERALD

*"We have in Miss Wetherald a genuine and indigenous Canadian Singer. Her muse lives amongst the fields and groves and under the starry sky. . . . The human heart is not forgotten, however, as a perusal of 'Mother and Child' and other lyrics will attest. Miss Wetherald's claim as a true singer is strengthened in 'Mother and Child'. . . . There are many verses worthy to be committed to the memory and cherished."—"Pharos" in Toronto Globe.*

**A**GNES ETHELWYN WETHERALD was born of English-Quaker parents, at Rockwood, Ontario, April 26th, 1857. Her father was the late Rev. William Wetherald, who founded the Rockwood Academy about the middle of the last century, and was its principal for some years. He was a lover of good English, spoken and written, and his brilliant daughter has owed much to his careful teaching. He was the teacher whom James J. Hill, the railway magnate, has held in such grateful remembrance.

Additional education was received by Miss Wetherald at the Friends' Boarding School, Union Springs, N.Y., and at Pickering College, Ont.

Miss Wetherald began the writing of poetry in her thirties while she was editing the Woman's Department of the Advertiser, London, Ont., under the *nom de plume*, "Bel Thistlewaite"; and her first book of verse, "The House of the Trees and Other Poems", did not appear until 1895 (Lawson, Wolfe & Co., Boston and New York, and Wm. Briggs, Toronto). This book at once gave her high rank among women poets, and widely-increased fame.

Before this Miss Wetherald had collaborated with Mr. G. Mercer Adams in writing and publishing a novel, "The Algonquin Maiden", which, however, did not meet with a profit-paying reception.

In 1902 appeared her second volume of verse, "Tangled in Stars" (The Gorham Press: Richard G. Badger, Boston, Mass.), and in 1904 her third volume, "The Radiant Road", from the same publishing house.

In the autumn of 1907 a collection of one hundred and sixty-one of Miss Wetherald's best poems, entitled "The Last Robin: Lyrics and Sonnets", was issued by William Briggs, Toronto. It was warmly welcomed generally, by reviewers and lovers of poetry, and it at once established for the poet enduring fame. The many exquisite gems therein so appealed to Earl Grey, the then Governor-General of

Canada, that he wrote a personal letter of appreciation to the author, and purchased twenty-five copies of the first edition for distribution among his friends.

For years Miss Wetherald has resided on the homestead farm, near the village of Fenwick, in Pelham Township, Welland County, Ontario, and there in the midst of a large orchard and other rural charms, has dreamed, and visioned, and sung, pouring out her soul in rare, sweet songs, with the naturalness of a bird. And like a bird she has a nest in a large willow tree, cunningly contrived by a nature-loving brother, where her muse broods contentedly, intertwining her spirit with every aspect of the beautiful environment.



### THE SCREECH OWL

Hearing the strange night-piercing sound  
Of woe that strove to sing,  
I followed where it hid, and found  
A small soft-throated thing,  
A feathered handful of gray grief,  
Perched by the year's last leaf.

And heeding not that in the sky  
The lamps of peace were lit,  
It sent abroad that sobbing cry,  
And sad hearts echoed it.  
O hush, poor grief, so gray, so wild,  
God still is with His child!



### THE FIRST BLUEBIRD

First, first!

That was thy song that burst  
Out of the spring of thy heart,  
Incarnate spring that thou art!  
Now must the winter depart,  
Since to his age-heavy ear  
Fluteth the youth of the year.

Low, Low,

Delicate, musical, slow;  
Lighten, O heaven that lowers,  
Blossom, ye fields, into flowers,  
Thicken, ye branches, to bowers;  
And thou, O my heart, like a stone,  
Wilt thou keep winter alone!

### THE INDIGO BIRD

When I see,

High on the tip-top twig of a tree,  
Something blue by the breezes stirred,  
But so far up that the blue is blurred,  
So far up no green leaf flies  
"Twixt its blue and the blue of the skies,  
Then I know, ere a note be heard,  
That is naught but the Indigo bird.  
Blue on the branch and blue in the sky,  
And naught between but the breezes high,  
And naught so blue by the breezes stirred  
As the deep, deep blue of the Indigo bird.

When I hear

A song like a bird laugh, blithe and clear,  
As though of some airy jest he had heard  
The last and the most delightful word;  
A laugh as fresh in the August haze  
As it was in the full-voiced April days;  
Then I know that my heart is stirred  
By the laugh-like song of the Indigo bird.  
Joy on the branch and joy in the sky,  
And naught between but the breezes high;  
And naught so glad on the breezes heard  
As the gay, gay note of the Indigo bird.



### THE HOUSE OF THE TREES

Ope your doors and take me in,  
Spirit of the wood;  
Wash me clean of dust and din,  
Clothe me in your mood.

Take me from the noisy light  
To the sunless peace,  
Where at midday standeth Night,  
Signing Toil's release.

All your dusky twilight stores  
To my senses give;  
Take me in and lock the doors,  
Show me how to live.

Lift your leafy rook for me,  
Part your yielding walls,  
Let me wander lingeringly  
Through your scented halls.

Ope your doors and take me in,  
Spirit of the wood;  
Take me—make me next of kin  
To your leafy brood.



#### THE HAY FIELD

With slender arms outstretching in the sun  
The grass lies dead;  
The wind walks tenderly and stirs not one  
Frail fallen head.

Of baby creepings through the April day  
Where streamlets wend,  
Of child-like dancing on the breeze of May,  
This is the end.

No more these tiny forms are bathed in  
dew,

No more they reach  
To hold with leaves that shade them from  
the blue  
A whispered speech.

No more they part their arms and wreath  
them close  
Again, to shield  
Some love-full little nest—a dainty house  
Hid in a field.

For them no more the splendor of the  
storm,

The fair delights  
Of moon and star-shine, glimmering faint  
and warm  
On summer nights.

Their little lives they yield in summer  
death,

And frequently  
Across the field bereaved their dying  
breath  
Is brought to me.

#### THE SONG SPARROW'S NEST

Here where tumultuous vines  
Shadow the porch at the west,  
Leaf with tendril entwines  
Under a song sparrow's nest.

She in her pendulous nook  
Sways with the warm wind tide,  
I with a pen or a book  
Rock as soft at her side.

Comrades with nothing to say,  
Neither of us intrudes,  
But through the lingering day  
Each of us sits and broods.

Not upon hate and fear,  
Not upon grief or doubt,  
Not upon spite or sneer,  
These we could never hatch out.

She broods on wonderful things:  
Quickening life that belongs  
To a heart and a voice and wings,  
But—I'm not so sure of my songs!

Then in the summer night,  
When I awake with a start,  
I think of the nest at the height—  
The leafy height of my heart;

I think of the mother love,  
Of the patient wings close furled,  
Of the sky that broods above,  
Of the Love that broods on the world.



#### EARTH'S SILENCES

How dear to hearts by hurtful noises  
scarred

The stillness of the many-leaved trees,  
The quiet of green hills, the million-starred  
Tranquility of night, the endless seas  
Of silence in deep wilds, where nature  
broods

In large, serene, uninterrupted moods.

Oh, but to work as orchards work—bring  
forth

Pink bloom, green bud, red fruit and  
yellow leaf,  
As noiselessly as gold proclaims its worth,  
Or as the pale blade turns to russet sheaf.  
Or splendid sun goes down the glowing  
west,

Still as forgotten memories in the breast.

How without panting effort, painful word,  
Comes the enchanting miracle of snow,  
Making a sleeping ocean. None have heard  
Its waves, its surf, its foam, its overflow;  
For unto every heart, all hot and wild,  
It seems to say, "Oh, hush thee! hush, my  
child!"



### IF ONE MIGHT LIVE

If one might live ten years among the  
leaves,

Ten—only ten—of all a life's long day,  
Who would not choose a childhood 'neath  
the eaves

Low-sloping to some slender footpath  
way?

With the young grass about his childish  
feet,

And the young lambs within his un-  
grown arms,

And every streamlet side a pleasure seat  
Within the wide day's treasure-house of  
charms.

To learn to speak while young birds  
learned to sing,

To learn to run e'en as they learned to  
fly;

With unworn heart against the breast of  
spring,

To watch the moments smile as they  
went by.

Enroofed with apple buds afar to roam,  
Or clover-cradled on the murmurous  
sod,

To drowse within the blessed fields of home,  
So near to earth—so very near to God.

How could it matter—all the after strife,  
The heat, the haste, the inward hurt, the  
strain,

When the young loveliness and sweet of  
life

Came flood-like back again and yet again?

When best begins it liveth through the  
worst;

O happy soul, beloved of Memory,

Whose youth was joined to beauty as at  
first

The morning stars were wed to harmony.

### MOTHER AND CHILD

I saw a mother holding  
Her play-worn baby son,  
Her pliant arms enfolding  
The drooping little one.

Her lips were made of sweetness,  
And sweet the eyes above;  
With infantile completeness  
He yielded to her love.

And I who saw the heaving  
Of breast to dimpling cheek,  
Have felt, within, the weaving  
Of thoughts I cannot speak;

Have felt myself the nestling,  
All strengthless, love-enisled;  
Have felt myself the mother  
Abroad above her child.



### DEAD LEAVES

Dead leaves in the bird's nest,  
And after that the snow;  
That was where the bird's breast  
Tenderly did go.

Where the tiny birds pressed  
Lovingly—and lo!

Dead leaves in the bird's nest  
Under falling snow.

Dead leaves in the heart's nest,  
And after that the snow;

That was where the heart's guest  
Brooded months ago,

Where the tender thoughts pressed  
Lovingly—and lo!

Dead leaves in the heart's nest  
Under falling snow.



### MY ORDERS

My orders are to fight;

Then if I bleed, or fail,

Or strongly win, what matters it?

God only doth prevail.

The servant craveth naught

Except to serve with might.

I was not told to win or lose,—

My orders are to fight.



## AT WAKING

When I shall go to sleep and wake again  
 At dawning in another world than this,  
 What will atone to me for all I miss?  
 The light melodious footsteps of the rain,  
 The press of leaves against my window-  
   pane,  
 The sunset wistfulness and morning bliss,  
 The moon's enchantment, and the twi-  
   light kiss  
 Of winds that wander with me through the  
   lane.

Will not my soul remember evermore  
 The earthly winter's hunger for the  
   spring,  
 The wet sweet cheek of April, and the  
   rush  
 Of roses through the summer's open door;  
 The feelings that the scented woodlands  
   bring  
 At evening with the singing of the  
   thrush?



## THERE IS A SOLITUDE

There is a solitude within the heart  
 Unpenetrated by the eye of man,  
 At its first dawn, when consciousness be-  
   gan,  
 The birds sang strong as at Creation's  
   start,  
 The sun illumed the stillness with his dart,  
 And through the groves the naked spirit  
   ran  
 Rained on by dew-drenched boughs—his  
   end and plan  
 To be of loveliness the fairest part.

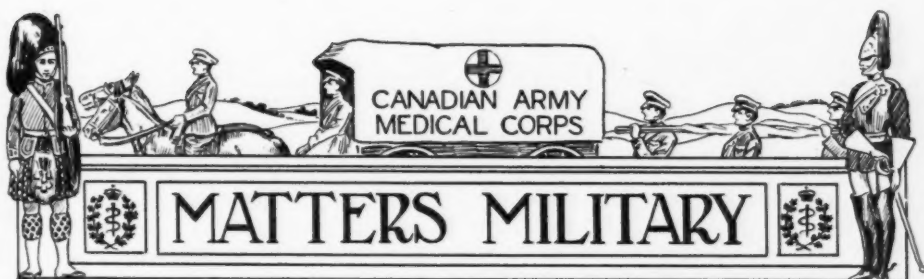
O thou that feels the world's dust mount  
   and mount  
 Up to the jaded nostrils, smarting eyes,  
 There is a solitude within thy heart;  
 Go, wash thyself in that transfiguring  
   fount,  
 And feel the primal bliss, the old sur-  
   prise,  
 Discovering how divine a thing thou  
   art.



## THE FOLLOWERS

One day I caught up with my angel, she  
 Who calls me bell-like from a sky-  
   touched tower,  
 'Twas in my roof-room, at the stillest  
   hour  
 Of a still, sunless day, when suddenly  
 A flood of deep unreasoned ecstasy  
 Lifted my heart, that had begun to cower,  
 And wrapped it in a flame of living  
   power.  
 My leader said, "Arise and follow me."  
 Then as I followed gladly I beheld  
 How all men baffled, burdened, crossed  
   or curst,  
 Clutch at an angel's hem, if near or  
   far;  
 One not-to-be-resisted voice, deep-belled,  
 Speaks to them, and of those we call the  
   worst,  
 Lo, each poor blackened brow strains  
   to a Star!





## SANITATION OF A MILITARY CAMP

By MAJOR F. L. VAUX, A.D.M.S., M.D., No. 10

**A**S an illustration of a military camp the case of Sewell may be considered not only because it is the one in which all are interested in the West, but because it exemplifies the difficulties attendant on furnishing a complete sanitary system for a short time. For the brief period of two weeks, Sewell, Manitoba, at other times a mere railway siding, not even a flag station, is the third largest town in Manitoba. It springs up like magic and disappears in a somewhat similar way. With the exception of latrine shelters and rough lumber for tables, there is nothing stored there. And, indeed, for the first two years, absolutely nothing greeted the eyes of the advanced party of regular troops save rolling prairie, dotted with clumps of fir trees. Although only twenty miles from Brandon, it is 100 miles from the base of supplies—Winnipeg. Yet 6,000 troops encamped there in June of this year under sanitary conditions which left little or nothing to be desired. The number could have been doubled and the duration of the camp trebled, yet the sanitary arrangements would have been ample, necessitating only the shifting of the lines for a few yards.

Briefly, the system in vogue is as follows: The camp commandant is responsible only to the Militia Council but his responsibility includes the health of the troops, and this responsibility is in turn continued to brigade and regimental commanders. There is one supreme medical authority, the assistant director of medical services, who alone is responsible for advising the commander in whose name all orders regarding sanitation are issued. He is assisted by two staff officers for medical services, the junior of whom is engaged in continual supervision of the lines. Reports as to neglect are made by him to the Assistant Director of Medical Services, who in turn brings them to the notice of the Camp Commandant. Upon the latter devolves the censure of negligence. The same system is carried on within brigades, and it has been found that when brigadiers are alert there is little need of invoking the central authority. The chief engineer officer, officially styled the Commanding Royal Canadian Engineer, co-operates with the Medical Service under the co-ordination of the Commandant's administrative staff officer, but both of these services are separate, neither having jurisdiction over the other, and their respective duties being clearly defined. Under this organization the work of sanitation proceeds rapidly and easily. The Chief Engineer provides annually the amount of material for the sanitary services deemed necessary by the Chief Medical Officer, and it may be noted here that it is an unwritten rule that

whatever works suffer there must be no cutting of sanitation estimates. This material is stored by the engineers and issued to units in accordance with a scale revised each year. It is installed by fatigue parties of the units concerned under direct supervision of the regimental medical officer, the staff officers for sanitation co-ordinating the systematic installation on exact lines throughout the whole camp. The material provided is as follows: One cast iron incinerator for each kitchen. This may be estimated at six per cavalry regiment, i.e., one per squadron mess, sergeant's mess, and officers' mess, and one garbage receptacle per kitchen. Supplies of crude oil as needed to keep incinerators alight. A receptacle is issued for each squadron or company and this is filled daily on requisition as needed. Latrine accommodation is provided for five per cent. of the troops. Wooden fly-proof shelters are provided complete in every detail and with seats. Small two-seated ones are provided for officers, five-seated ones for men. Chloride of lime is provided by the Army Service Corps on requisition. Large galvanized iron pails fit closely under these and are filled one-third full with water to which is added one pint of crude oil. A civilian scavenger system is provided and there are no complaints. Urinals consist of a trench about six inches deep. The earth is turned over daily and chloride of lime provided. The urinal is screened with canvas. There is no need to go further into details of camp cleanliness as these are universal. It is only necessary to refer to the pattern of garbage receptacles and incinerators. For the former we employ a fibre tub. The tub is perforated with 18 auger holes and provided with a tin cover. It is placed over a cross trench and when drainage is complete the contents are burned in the incinerator. This latter consists of a cast iron (sand mound) chimney to the bottom of which is bolted a grating, the corners of which project to fit over a circular hole from which radiate cross trenches for draught. Crude oil is used to facilitate destruction. These are lit at reveille and a good fire is ready for the burning of the remains of food after breakfast. They are carefully tended throughout the day, and are sufficient for the purpose of scrupulous cleanliness.

This scheme is the one which would be put in force under exceptional circumstances where practically the whole city was destroyed, the civic government unable to be continued, and therefore temporary military government was necessary to assist in reorganization and maintain law and order. Military administration would bring to the help of the inhabitants not only food and shelter, but sanitary supervision. If so authorized by the Militia Department the supply of sanitary material now maintained at the headquarters of the District would also be immediately placed at the disposal of the stricken city. Cases might also arise where civil administration would be maintained, the military authorities co-operating, and assisting with the loan of sanitary appliances until purchase could be effected in the usual way. In either of the above situations nothing more need be said as the conditions would in a very short time approximate themselves to those of a military camp as above described.

The situation which is most difficult for a municipality is that in which either no regular troops with supplies are available or from any other cause they are not sent. In 1910 the Permanent Force of Canada was on duty at no less than four different points and should a severe disaster have occurred in any city very few would have been available. Fortunately in Regina you have always the Depot Establishment of the R.N.W.M.P., but other places are not so fortunately situated. And whilst local militia are a great help the fact remains that they are not so organized and trained as to be capable of taking hold of a situation with the same instant effect that the action of regulars has. It may easily happen also that their own homes are wrecked whilst it is no uncommon thing to find the senior officers holding such important posi-

tions in civic life that their services as such are required. Nevertheless, the value of a military unit cannot be overlooked, and as all medical officers now receive a most thorough training in sanitation they especially are of the greatest help to a community in such an emergency. Under these conditions a devastated city would in time obtain the system of military administration.

The next example is the one most difficult to deal with, viz.: a municipality unable to obtain regular troops and having either no militia organization or only an incomplete detail, e.g., a company or squadron. Fortunately this is becoming a rare condition, but if the disaster overwhelmed the leaders of even a regiment a condition very similar would develop. Under such conditions a municipality may have to suspend the ordinary forms of government and adopt the military system. This point must be dwelt upon for to compare the procedure under popular government with that obtaining in the military system is to omit the most important feature, viz., the subordination of popular will to the ruling of one mind not in any way responsible to the public. Once, however, this condition becomes the same the comparison can be effected. This being granted there follows the appointment of:

- (1) A chief medical officer.
- (2) A chief engineer.
- (3) Officers for sanitation.
- (4) The organization of bearer companies and first aid squads.
- (5) The organization of sanitary detachments.

It is assumed that civic police endowed with special powers are available not only to prevent pillage, etc., but to enforce the orders in regard to sanitation.

We have thus created upon a military model a temporary pseudo military organization, but so far it is on paper. What of the terrific confusion that would ensue if fire should succeed devastation by flood as at Dayton, or by cyclone as in Regina. With telephones and telegraphs out of action and darkness supervening upon the destruction of the electric plant, the confusion would be terrific. Doubtless order would finally be evolved out of chaos, but in the meantime disease would make its appearance or the foundation be laid for its subsequent development. It becomes necessary, therefore, that there be considered in times of quiet and safety the personnel for these important appointments. For the position of chief medical officer the local medical officer of health is the first choice, and generally he will be most suitable, being continually in touch with local municipal administration. Practically the only exception to this rule would be in the case of a municipality having a very senior medical officer possessing in a special degree the confidence of the public, the reverse conditions pertaining in the case of the medical health officer. The happiest combination is that of the medical officer of health who is also an officer of the Army Medical Corps and has held the appointment of Sanitary Officer at a camp of instruction. The above remarks apply to the city engineer, but to a less degree.

In the St. John Ambulance Brigade there is not only the nucleus but the actual body of a bearer and sanitation first aid corps—a civilian field ambulance. The city scavengers aided and assisted by destitute persons of a certain grade who are always liable to make trouble unless employed at once, form the conservancy squads.

Such precautions are as a rule only necessary where there are no large wholesale houses, though as these may be destroyed it is advisable that the works department of a threatened city should accumulate and safely store an emergency supply.

The emergency measures of conservation will be indicated by the extent of the disaster. Only in extreme cases will the entire sewage system of a city be destroyed, e.g., as by an earthquake. But houses will be wrecked or burn-

ed, thus depriving the inhabitants of civic conveniences, or a pumping station may be destroyed shutting off the water supply and thus forcing citizens to stop using water closets. To remedy this most serious state of affairs or to serve the needs of a temporary camp the most satisfactory method is to utilize the pail system with the addition of crude oil as described. The conservancy squads will be detailed to attend to these. The contents must be buried or incinerated. The latter would at first be impossible, special apparatus being necessary. The use of this system will entirely eliminate fouling of the ground and prevent the fly nuisance. The users will erect improvised shelters.

For the destruction of garbage and refuse nothing equals the cast iron incinerator, but failing these any iron or steel tank with the bottom knocked out will serve the purpose so long as space for draught is left underneath. A more rapid method is to pile rails secured from the nearest railway yards or indeed any kind of iron or other metal in criss-cross shape so that air may circulate. They will soon be red hot and will consume anything. Failing these, chimneys of brick, stones or sods may be erected over a trench. Or as a last resort ordinary fires should be kindled at intervals and carefully watched and tended. Fire is the great purifier and its immediate employment in the form of forced combustion is essential. The smoke of burning garbage will also prevent flies from making their appearance. The influence of this is often overlooked, but it is a large part of the value of incineration. Chloride of lime must play an important role in the preservation of health in emergency conditions. Reliance must be placed upon it for the purification of water obtained from neighboring and doubtful sources. It can be used in latrine buckets if no crude oil is available, whilst scattered freely around its purifying influence will soon be apparent. Fortunately it is cheap and easily obtainable. The supervision of sanitation and especially of conservancy will be a problem. The value of the Army Medical Corps or indeed of men of any corps who have been trained in our annual camps will be here demonstrated to the fullest, as it requires more than energy or good will to carry out these duties thoroughly.



## VALCARTIER

(An Impression.)

By GEORGE D. PORTER

**F**ROM the moment that the wonderful tented city of Valcartier breaks upon one's astonished sight to the last glimpse obtained of the Laurentian mountains surrounding it from the homeward-bound and crowded train, this city of surprises holds one's imagination completely. To the strong man as well as to the poet it has a fascination. The westerner is completely subdued before a city which has grown up in a night, or, to be more accurate, in six weeks of time, but he feels at home, for the dust of the foothills fills the air, and the tramp of men and the strong swing of life are everywhere. A beautifully situated plain nestling at the foot of the Laurentian mountains is this camp, and around its borders flows the Jacques Cartier river.

The city proper, with its population of over thirty thousand men, makes a wonderful sight; the tents covering many square miles of level ground. The city is electric lighted. There is a fine water supply. Sanitary arrangements are complete, and the great midway, running for miles straight through the heart of this tented city, is crowded with interest.

There are men from all classes of society, but all swarthy and bronzed; the French and the English, both of them here; the East and the West are well



met here, while tethered in groups and alone are some seven thousand fine horses. One's mind reaches for comparisons, but comparisons fail. To humor that weakness, let us compare it to some great exposition. In this we have three main interests,—the exposition proper, the grand stand display, and the midway. In the camp we have the camp proper, the parade grounds, and the unnamed midway. Along this "great white way" we see the men in full military dress, and also in all stages of undress. Along the board walk we see the little stores, the barber's tents crowded with unshaven chins, and lather and soap everywhere; men washing their clothes at the troughs along the way, cooks roasting meat by the ton; Highlanders scrubbing their faces with lather enough on to fill a snow shovel; tables crowded with men writing their letters home. Some men are polishing buttons, others shining their shoes, while here and there are groups playing football, often interrupting the slumbers of those snatching some sleep by their tent door. It is a dry camp, but pop and ginger beer flow freely, while the ubiquitous ice cream cone is held in many a hand. One man is proudly showing a comrade a photograph of his little boy. "He is some boy, that," he says, somewhat huskily, and then placing it carefully in an envelope hides it inside his coat, and lights his pipe, for the puff of a pipe is a man's solace and his screen.

In the afternoon the great review takes place. Here thirty thousand men passed before our Royal Duke, and as many thousand citizens of all classes from the habitant to our Premier, as could be crowded along the front of this magnificent plain. Motor trucks, automobiles and buggies were crowded with humanity, and thousands were on foot. The motor trucks lining the parade were literally crowded with men, women and children. Men high up in Canadian life were glad of standing room anywhere on these trucks, while beautifully gowned women were happy to be seated on the most dilapidated buckboards.

Truly, our boys made a magnificent sight. Cheer after cheer goes up as the various companies march past, and the hearts beat high as the artillery rumbles by; but, oh! those grim wagons bringing up the rear! Reminders of the tragedy of war! These great Red Cross wagons recall the news from the front where our boys are soon to be. But thank God for the Army Medical man. He is here at Valcartier, and he will be there, wherever that may be to give aid and comfort to those in need.

Individually, the soldiers all appear fit and strong, every face is a tanned one, every form is erect, every eye is keen and every heart beats true. A spirit of quiet confidence pervades the camp and impresses the beholder. Valcartier will loom large in Canadian history. Its men will raise our national life to a high plane and while the mists now hide the future we may rest assured that our brave boys will do their part and bring credit to their country.

In old Quebec, the night before the great review, the sight of the women and the military men dancing on the floors of the Chateau Frontenac recalled to mind the night before that other Waterloo. Here too, are fair women and brave men, and as, here and there, a couple stroll along the wide terrace overlooking the moonlit waters below, romance fades before the reality before them for on the majestic waters of the St. Lawrence lie the ships which are soon to pass out into the night bearing away their throbbing load of Canadian chivalry to the call of honor and to arms.

### NOTES

We now know that with the First Canadian Contingent there will go to the front, 3 Field Ambulances, 1 Clearing Hospital, 2 Stationary Hospitals and 2 General Hospitals. The personnel of a Field Ambulance and a Clearing Hospital in war you will find in our September number. We now present the personnel of a Stationary Hospital and a General Hospital believing that our readers will be glad to know where our men are serving with the Army Medical Corps.

## ARMY MEDICAL CORPS.

## A General Hospital (520 beds)

Detail	Personnel						Riding Horses
	Officers	Warrant Officers	S. Sgts. and Sgts.	Buglers	Rank and file	Total	
Commanding Officer, Medical	1					1	1
Other medical officers including one as Registrar	19					19	2
Quartermaster	1					1	
Warrant officers		2				2	
Staff Sgts. and Sgts.			4			4	
Nursing duties			1			1	
Steward			2			2	
Compounder			1			1	
Cook			1			1	
Packstore keeper			1			1	
Linen store keeper			1			1	
Clerks			3			3	
Bugler				2		2	
Corporals					1	1	
Steward					1	1	
Cook					1	1	
Clothing store keeper					1	1	
General duties					3	3	
Privates					84	84	
Total	21	2	13	2	90	128	3

## Nursing Sisters

Matron ..... 1      Sisters ..... 90

## A Stationary Hospital (200 beds)

Detail	Personnel						Riding Horses
	Officers	Warrant Officers	S. Sgts. and Sgts.	Buglers	Rank and file	Total	
Medical Officer Commanding	1					1	1
Other medical officers	6					6	2
Quartermaster	1					1	
Sergeant-major		1				1	
Staff Sgts. and Sergeants			2			2	
Nursing duties			1			1	
Steward			1			1	
Compounder			1			1	
Cook			1			1	
Packstore keeper			1			1	
Clerk			1			1	
General duties			1			1	
Bugler				1		1	
Corporal					1	1	
Compounder					1	1	
Cook					1	1	
Clerk					1	1	
General duties					4	4	
Privates					63	63	
Total	8	1	8	1	70	88	3

## Nursing Sisters

Matron ..... 1      Sisters ..... 16

## Veterinary Hygiene

### CONTAGIOUS ABORTION IN DAIRY COWS AND THE PRESENCE OF THE BACILLUS IN THE MILK

By CHARLES EVANS, D.V.S.

THE presence of the bacillus of contagious abortion in the economy of dairy cows and the dissemination of the germ by the milk, forms the subject of this paper.

During the past twelve months, the Health of Animals Branch, Department of Agriculture, at Ottawa, has on various occasions been approached by veterinarians with a view of obtaining information regarding sporadic outbreaks which have occurred from time to time among dairy herds.

The chief object was to determine whether these sporadic abortions which had occurred in the herds of their clients was, as a result of the bacillus of Bang.

In commencing this work particular attention was given to the results obtained by Schroeder & Cotton on the presence of the bacillus of contagious abortion of cows in the milk from dairy herds, and was responsible for the particular experiments which were made, which led to the isolation of the organism from dairy milk.

That milk from aborting cows is pathogenic to healthy guinea-pigs introduces another factor to the already existing difficulties met with in the effort to obtain a perfect milk, and further studies along these lines seem warranted in view of the fact that cow's milk is so often used as a substitute for mother's milk in the feeding of infants.

Those so greatly dependent upon cow's milk, viz., the sick and convalescent, infants and children, are part of a community principally affected by this food. The question is what part can the bacillus of

contagious abortion play in the economy of healthy children?

From the view point of the dairymen the disease has its economic importance, resulting as it does in the loss of calves and in the shrinkage in the supply of milk from cows which have aborted. From evidence at our command we learn that the average shrinkage in yield is one-half that produced by a cow carrying her calf the full term of gestation. These calculations have been made after careful inquiries from a number of local dairy farms which are known to have the disease in their herds.

The bacterial findings following the investigations will be given in brief. In a number of herds visited in the commencement of the work, the testimony of the owners was, that they had never before last summer experienced any losses from premature delivery of calves. Some of the herds were quite large, supplying contracts to dairies in the City of Ottawa. The depreciation in the milk yield, through this disease necessitated two of the dairymen requesting for a reduction in the amounts specified by their contracts.

Much literature has been published regarding contagious abortion of cows, and the text is familiar to the majority. Bearing this in mind I will not burden you any more than for the express purpose of substantiating my own observations condensed in this paper.

Premature expulsion of the uterine contents caused some embarrassment to the Patriarchs, because first mention was made of this condition in the book of Genesis, chapter 31, verse 38.

After thousands of centuries we refer again to the writings of Flander in 1804, who states that the peasants were so convinced of the contagious nature of this disease that they covered the expelled foetus carefully and carried it out through the byre window so that no cow could pass over the same route. In 1885 Nocard published his valuable report bringing forth evidence, although circumstantial, showing the contagious nature of this disease. Woodhead, McFayden and Campbell in 1889 demonstrated that abortion could be produced in ewes and cows by inserting into the vagina plugs of cotton wool containing the vaginal discharge of an aborting cow. It remained for Bang, in 1887, to definitely settle the question by isolating a very small non-motile organism, which he stated was the causative agent of the disease. This report was published in Denmark, but the following year, in London, England, he confirmed all his earlier observations.

The ease by which the disease can be spread from animal to animal is remarkable. The English Commission proved that ingestion of the bacilli with food was capable of infecting a healthy animal, therefore natural infection is by the mouth and external genitals. Vaginal discharges containing the bacillus is carried on the coats of the infected animals and their companions by the switching of the tail. Another cause is by the use of a bull in copulation which has previously served a cow having the disease. Dogs may transmit the contagion by carrying portions of a carelessly disposed aborted foetus, especially when an abortion takes place in the field. One outbreak which we investigated, there were over 40 cows infected by the introduction into the herd of a cow from premises in which abortion was believed to exist. Two heifers sold from this herd subsequently transmitted the disease to another herd. Both were free from abortion previous to this time.

The symptoms prior to the expulsion of the foetus in early abortions are usually unimportant. Beyond a slight ropy discharge from the vulva, a little increase in the size of the mammary gland, there are little premonitory symptoms foreshadowing what is to follow. The earlier the abortion occurs in the stage of gestation the less chance there is of noting the intro-

ductory symptoms. This is especially true with heifers aborting in the fourth and fifth month. With cows aborting during the latter stages the usual symptoms characteristic of normal parturition are more or less apparent. About the eighth month the calf is generally well-haired over, and often born living. Quite frequently these little fellows are poorly nourished and utter plaintive cries unceasingly, and if they do not die a few hours after birth, they are killed by attendants for obvious reasons. This phenomena of bawling may be due to brain lesions caused by bacterial infection.

When an abortion occurs early during the pregnancy, the foetus and its covering are so small that they may be easily overlooked by the attendants. Sometimes an abortion may occur in the field, and nothing suspected until the animal exhibits signs of oestrus the following month. Retention of the placenta in the latter cases generally calls forth the services of a veterinarian, and it is at once seen that many changes are observable in this organ. The degree of degeneration is according to the period. Usually one finds patches of yellowish flocculent exudate. Sometimes these areas are dryer than the surrounding tissue and have a cutting consistency like cheese. In other parts of the placental membranes small areas of inspissated yellow pus are seen. If one makes slides from small particles from these foci the characteristic mass formation of the bacilli are observed. From such tissue it is not hard to examine for the presence of these bacteria, even when the field shows considerable contamination from extraneous sources.

The organism of contagious abortion is a very small thick bacillus. It is non motile and has no spores. Whilst staining well with all the aniline dyes, its picture after staining with dilute carbol fuchsin is remarkable, in that it presents somewhat of an uneven granular staining, not unlike tubercle. It does not, however, retain its stain when treated with dilute acids or by the Gram method. Physical peculiarities possessed by this germ are such that it cannot be classified as either aerobic or anaerobic. According to Nowak, it occupies a position midway between the two. While our observations prove this to be correct, we have obtained an odd strain, which has

started on surface of our tubes under ordinary atmospheric conditions. The majority though required only a certain amount of oxygen, and unless this optima was provided we obtained no growth. The material from which pure cultures were obtained was, from three sources:

Placental membranes.

Viscera of foetal calves.

Milk of the Cows.

The remarkable discoveries of Schroeder and Cotton in the presence of the abortion bacillus in cow's milk is a most interesting contribution to what is already known concerning the bacillus. We have found in this laboratory that it is present in the milk of aborted cows from dairies where the disease has existed. This milk when injected into healthy guinea pigs produces lesions directly due to the presence of the bacillus. The amount of milk given to each pig varied in quantities from 5 to 10 cubic centimetres intraperitoneal. Death occurred in from six weeks to three months. Post mortem examination of the dead pigs revealed extensive lesions. The lymphatic glands enlarged from active inflammatory changes. The most characteristic changes were in the spleen. This organ was much increased in size, with small whitish areas throughout the pulp. The same change occurred in the liver, and on first looking at this organ one would be inclined to believe the infection to be due to tubercle. The pulp of the enlarged spleen provided abundant material, from which the bacilli could be isolated in pure cultures.

The medias used for primary cultures was raw-serum-agar. The method of cultivation was that devised by Nowak, by reducing the oxygen in the jar by growing cultures of the bacillus subtilis with the plantings.

For the study of the diagnosis the most reliable methods are compliment fixation and the agglutination tests. It is well to

note that serum tests do not offer a means of distinguishing between cows which are actively infected and those which may have acquired immunity. At the same time it would appear reasonable to suppose that if dairymen wish to keep their animals free from this disease, the exclusion of all animals giving a positive serum reaction would be a rational measure to adopt. Whether it will be possible in the future to immunize cattle against contagious abortion is still an unsettled question. Many are the medicinal agents recommended for the prevention and cure, and their merits advertised through the columns of the agricultural press. Some of these treatments cover a long period of time and are very expensive. There is no doubt but that many of the alleged specific remedies exert little specific action on contagious abortion, the "cures" being the natural results of tolerance or acquired immunity occurring after a few abortions. Rational attempts are now being made to immunize heifers with a living vaccine of attenuated organisms. Just what results are obtained will be given later. Prophylaxis seems to be the most reasonable study for the future, and possibly in the interest of Public Health, because, as already shown in experiments, although a cow may obtain an immunity by passing through a siege of the disease, she is capable of disseminating thousands of abortive bacilli with her milk. This fact, together with the knowledge that the bacillus is not an organism affecting the reproductive organs alone, but is capable of producing pathological lesions elsewhere and death, should be the initiative for greater work along these lines. It is advisable not to lose sight of the fact that the bacillus of contagious abortion is able to gain entrance to the blood through the alimentary canal. It might be reasonable to ask what part does this organism play in human pathology?





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### COLLECTION AND DISPOSAL OF REFUSE

By F. J. JOHNSON

*Superintendent of Scavenging, City of Winnipeg, Man.*

Read before the Winnipeg Members

**T**HE aim of the short paper that I am about to present is to treat of all phases of this important work so far as it concerns the interests of sanitary authorities in our Western cities, and for that purpose—a resume of the law bearing on the subject; a consideration of the nature of city refuse; a discussion of the system of collection; and finally of the methods of its disposal, both sanitary and insanitary.

To attempt to minimize the importance of the question of the removal and disposal of refuse would be to grossly ignore the very essentials of sanitary science and of a reasonably healthy existence. None of you who have lived in this city for the past ten years will deny the truthfulness of this statement. In fact, to systematically remove all refuse, in whatever form it may present itself, and to successfully dispose of it when so removed, is the backbone of the whole of the teaching of sanitary science and of the secret of the health of the population. The increasing urgency of the subject, as will be obvious, will be proportionate to the growth of communities, and particularly is this so with regards to the question of disposal.

Mere "disposal," however, is not by any means the only consideration in dealing with this material. For many years scientific experts, municipal engineers and public authorities have been directing careful attention to the utilization of refuse as fuel for steam production and

substantial progress has been made in the last decade.

In many cities, refuse is regarded as a valuable fuel, and successful efforts are being made to utilize its full calorific value. It may be further noticed that in many of the newer destructors the motive power derived is considerable, and is daily employed in operating all sorts of machinery, such, for example, as for the pumping of sewage, for grinding mortar, generating electricity for light and motive power, supplying steam to municipal workshops, stables and such like.

At the moment of the birth and first dissemination of the idea of lighting a town by electricity solely or mainly by means of the heat derivable from the burning of its house and other refuse, the economical importance of a combined undertaking of this character very naturally presented a somewhat fascinating stimulus to public authorities, and possibly has had much to do with the recent development of both the adoption of the principle of dealing with refuse by fire and also of lighting towns and cities by electricity. The views of many, however, were probably at first somewhat too sanguine as to the capabilities of such a combination, but from experience since gained it may be taken as demonstrated that a destructor installation properly designed is capable of affording a useful adjunct in the supply of power to an electric or other power-using undertaking. Also, when a system of thermal storage

can be introduced in a reliable and workable manner the degree of success will be materially enhanced.

The removal and disposal of the various forms of refuse usually created by the large population of cities and towns includes:

1. The scavenging and cleaning of streets and lanes, with the collection and disposal of street sweepings and catch-basin deposits.

2. The collection of house and trade refuse and the ultimate disposal of same by cremation or otherwise.

3. The removal and disposal of excreta from the privy, box-closet, pit-closet, or of sewage (as it is called when largely diluted with water), by means of a system of sewers, thus involving the whole question of the construction of "sewerage" and sewage disposal works.

In fact, works connected with the removal of refuse in some form or other is now becoming one of the most onerous and important duties devolving upon the municipal authorities. The subjects of sewerage and sewage disposal, however, are of such magnitude that, although being truly works for the "Removal and Disposal of Refuse" they are not usually understood to be included under this general heading; the term "refuse" being more properly applied to what is known as house, trade, and street refuse only, and to the consideration of which this paper is intended to be devoted. However, I hope to have the honor to read a paper to you on "Sewerage and Sewage Disposal," at some future date.

In order to ensure and assist the efficient execution of this work certain legal powers and obligations are given to local authorities and residents respectively.

Unfortunately in this city the obligations are all on the side of the resident and the powers with the local authority. This should not be so, for if residents comply strictly with the by-laws and regulations of a municipality surely they are entitled to some compensation, and should have the power to legally enforce a municipality to give them reasonable service and consideration.

The word "scavenger," according to Dr. Johnson is of Saxon origin, and is derived from a root signifying "to shave," or "to sweep." It means "a petty magistrate whose province it is to keep the streets clean," or, more commonly, "the laborer employed in removing filth" from the streets.

In early times when the practice of throwing filth into the streets was very much more general than at present, the business of scavenging was generally confined to street cleaning, the various receptacles as we understand them, being practically unknown.

As an example of the filthy state of streets in olden times reference may be made to the streets of Dublin, in respect to which, by way of a remedial measure, a writ was issued in 1489 "To Mayor and Bailiffs of Dublin from Gerald, Earl of Kildare, Deputy to Jasper, Lieutenant of Ireland for Henry VII.," which reads as follows: "The King has been informed that dung heaps, swine, hog stys and other nuisances in the streets, lanes and suburbs of Dublin, infect the air and produce mortality fevers and pestilence throughout the city. Many citizens and sojourners have thus died in Dublin. The fear of pestilence prevents the coming thither of Lords, Ecclesiastics and lawyers. Great detriments thence arise to his Majesty, as well as dangers to his subjects and impediments to business. The King commands the Mayor and Bailiffs to cause forthwith the removal of all swine, and to have the streets and lanes freed from filth, so as to prevent the loss of life from pestilential exhalations."

The importance of "scavenging" from a sanitary point of view being carried out systematically and efficiently throughout any municipality cannot be over-estimated. It is undoubtedly one of the most essential features towards a healthy district. In fact I would go so far as to say that "scavenging is the foundation of all sanitary science."

Your sewers, your drains and water supply are all secondary considerations if scavenging is neglected, and I would say to the authorities of any municipality: If you would raise the standard of the health of your community, mature your

scavenging arrangements and make them perfect..

The cleansing of streets and removal of street refuse does not come under the Sanitary Department of this city, but is efficiently taken care of by the Street Commissioner, but it would be well for every member of this association to study the question of efficient removal and disposal of street refuse as in many of the smaller cities this work is undertaken by the Sanitary Inspector, who is often the "Jack of all trades."

For the purposes of simplicity I propose to deal with the subject in question under three headings, namely: 1, temporary storage; 2, removal; 3, disposal.

Unfortunately the by-laws of the City of Winnipeg do not define what is "house refuse" and what is "trade refuse," consequently disputes often occur between residents and the Scavenging Department as to what should be removed by that department and what should not.

House refuse might be legitimately supposed to consist of: Ashes, animal and vegetable refuse from the kitchen, boots, rugs, hats, paper, etc. Glass, iron and tin ware; dead hens, dogs, cats, etc., and excreta from pit-closets.

Trade refuse consists of ashes, shavings, excelsior, straw, paper, packing material, and large quantities of tin cuttings and broken glass.

Household refuse is removed by the City Scavenging Department, and such portions of trade refuse as consists of animal and vegetable matter or tins and bottles that have contained organic matter. The remainder of the trade refuse has to be removed by the owner or occupant of the premises at their own expense.

Amongst the articles that usually find their way into the domestic receptacles are: Plaster and bricks, broken flower pots, stove pipes, furnace fittings and old stoves, wall paper, garden refuse and lawn cuttings, wood chips, sawdust, and yard cleanings.

To absolutely refuse to remove limited quantities of garden refuse and lawn cuttings from houses having the usual small garden plots attached seems an unneces-

sarily stringent policy and is often an impetus to dirty lanes and vacant lots; but the gratuitous removal of large quantities of such or any kind of trade refuse would not only lead to an imposition upon the scavenger, but also be unjust to the general taxpayer. The composition of house refuse is found to vary considerably in different localities, depending upon the conditions, habits and pursuits of the people, upon the different classes of fuel used and the nature of the district, whether of a high class residential district or a thickly populated business area. In summer, too, the quantity of vegetable refuse is larger and there is less of ashes. There is but little doubt that house refuse is year by year becoming a more valueless material and more difficult of disposal, owing very largely to its containing less combustible matter, a result of the high cost of fresh meat, fish and vegetables, increasing the consumption of preserved meats, vegetables and fruit, from which there is little waste, thus reducing the proportion of inorganic refuse such as tins and bottles. Having considered the various classes of refuse to be dealt with the next point to be considered is "temporary storage."

House refuse must be stored, of course, in some receptacle during the intervals of the scavenger's visits, and in order to ensure that some form of approved receptacle may be provided and maintained certain regulations are provided by the City of Winnipeg for this purpose.

All animal and vegetable matter must be stored in metallic receptacles, with closely fitting covers. The size of the can must not be larger than eighteen inches in height and eighteen inches in width. When filled with refuse this receptacle weighs about 60 pounds and is about all the weight one man can comfortably lift to the wagon.

Whether this class of receptacle should be used in winter or not is a matter of controversy. Speaking from experience I find it very unsuitable in intense frosty weather owing to the difficulty in removing the contents and the frequent damage to receptacles by the harsh treatment that it is necessary to use in order to remove contents. During the summer months

this receptacle is all that could be desired. It is fly-proof and impervious, thus doing away with the feeding grounds of one of our worst enemies—the house fly.

Tins, bottles and other incombustible refuse must be kept in wooden boxes with a tight fitting cover. Alas, how sadly this class of receptacle is conspicuous by its absence. It is just as important that tins and bottles that have contained organic refuse should be kept in fly-proof receptacles as well as garbage, but more often they will be found stored in open pails, barrels, nail kegs, fruit baskets, cardboard boxes, in fact in anything but a fly-proof box.

Ashes must be placed in a suitable spot for loading into wagons. This is not a very satisfactory clause. Ashes can cause quite a lot of annoyance when scattered by the wind to neighboring premises. They should be kept in suitable fireproof bins. These bins should be constructed of a standard pattern and size and be built by the owner as a permanent fixture.

Slop water must be stored in water-tight barrels properly screened in summer and in tight cribs in winter. The less said about the slop barrel the better for I have never yet seen one that did not very soon become a disgusting sight as well as a source of annoyance to every person resident in the neighborhood by reason of the emanation of odors of putrefying grease, etc. Personally I would sooner see slop water emptied into the pit-closet and removed with the nightsoil. In fact that is the usual receptacle for that class of refuse.

Where sewer and water mains are not installed on a street every house must be provided with a concrete or cement lined brick pit-closet with a suitable weather-proof superstructure. I do not think that this class of closet could be improved upon as a temporary arrangement. The pits are waterproof and dark, thus excluding surface water and flies, and the odor from same is hardly apparent under ordinary conditions. The contents are easily removed and the nature of construction allows efficient disinfection of the pit in case of contagious disease existing on the premises.

One very necessary and important improvement that should be made with regard to the temporary storage of refuse is that all receptacles should be kept under cover by means of a small shed. This shed should be weather-proof and well ventilated, but fly-proof. It should be of a standard pattern in order that the scavenger could identify it with ease. The floor should be of concrete and stand above the surrounding ground level.

This innovation would do much to lessen the number of complaints of non-removal of refuse as the scavenger would know exactly where to find the receptacles. It would also eliminate the annoyance caused by dogs and young children scattering refuse around the yards and would exclude the possibility of the house fly and rats feeding on the refuse, besides improving the whole appearance of the premises by having all refuse out of sight.

It has already been shown that for sanitary reasons the collection of refuse should be as frequent as possible. A daily service should be adopted in all built-up areas. It would, of course, be impossible to lay down any one system of collection that would be applicable to all districts, as experience alone can prove what is the best plan to adopt in any particular case, but generally speaking the following methods are universally employed.

Garbage is collected daily without any notice from the occupier from all hotels, restaurants, butcher shops, etc., in the built up areas of the city. Twice a week from stores and apartment blocks, and once a week from dwelling houses.

Incombustible refuse is collected twice a week from hotels, restaurants, etc., in the built up area and once every two or three weeks in the remainder of the city.

Ashes are removed in the spring of the year, but for the convenience of residents who wish a regular removal of ashes the department undertakes to remove ashes from fireproof ash bins of approved pattern all the year round.

Pit-closets of approved construction are emptied about every four weeks and temporary box closets are cleaned upon request of the owners at their own expense.

The vehicles used for the collection of garbage in this city leave much to be de-



sired. The latest design, when new are practically watertight, but after they have been in use for some time, I am doubtful if they will remain so. A good wagon should be absolutely water-tight and impervious to moisture. It should be practically fly-proof and only a small portion of the cover should be up at a time, just sufficiently large for the admittance of refuse. It should preferably be made to dump.

Tins and bottles are collected both in carts and wagons. The former being found satisfactory on good roads.

Nightsoil and slops are removed in watertight covered tanks and with care they are found suitable for the purpose.

Ashes are removed in dump carts in summer and in wagons during the spring clean-up. The carts are a very handy vehicle for removing this class of refuse, but both ash carts and wagons should be covered when loaded, to prevent annoyance by reason of the wind scattering the contents when passing along the streets.

Whilst the system of collection in this city is not perfect it compares well with any city in Canada and is improving all the time.

The chief points to be considered in organizing a proper system of refuse collection are: The collections must be frequent, especially in hot weather, so as to admit only a small accumulation of refuse, thus producing a maximum of benefit to the public health. A thoroughly systematic and regular daily routine must be adhered to so that householders may know as precisely as possible when the scavengers will appear, thereby giving rise to the minimum inconvenience to the public, and inducing fuller co-operation, which will considerably facilitate the work of collection. All receptacles should be of a standard pattern, placed where easily seen and accessible for loading the contents into wagons. They should be adequate in number to hold all the refuse that accumulates in the interval between the collections. There should be an official whose duty it would be to make house to house visits to see that all refuse is properly removed from the premises in his district. Householders should be well informed as to what is house refuse, and

as much garden, vegetable or other organic matter as possible should be consumed on the premises.

The system adopted should be that which is found the most efficient combined with economy.

Space and time will not permit of a full description of the hundred and one methods of disposing of refuse, such as sorting out saleable material, manufacturing fertilizer, extracting grease, etc., and I only propose to deal with the destruction of refuse by fire and by depositing on dumps.

Having considered briefly the varieties of refuse to be dealt with, the different methods of temporary storage upon premises, and the systems of removal from dwellings and places of business where created, the remaining question is the one of most importance and difficulty—that of methods of disposal.

These methods as may well be expected vary widely in different parts of the country, according as they may be influenced by local circumstances, but it may be at once stated that for all large towns and cities the destruction (and oftentimes even utilization) of refuse by cremation is at present regarded as being at once the most sanitary, efficient, and in many cases the only means of satisfactory disposal.

The most prominent and influential question occupying the minds of those having control of these matters is not (as may be reasonably anticipated) what is the most sanitary method of disposal, but, what is, for the time being, the most economical. This being so, the refuse destructor is regarded naturally as an altogether needless luxury until all the available waste land, hollows, etc., have been entirely monopolized, probably not only by the town refuse, but also by rows of streets and houses. This juncture in the town's history having been arrived at, and when hauling to distant dumps would be too expensive an operation to be entertained, attention is then turned toward the capabilities of the destructor as the only possible outlet for the difficulty.

The chief methods employed for the disposal or destruction of refuse may be briefly summarized as follows:



(a) The mixing of ashes with excreta and disposing of same for agricultural purposes.

(b) Hauling refuse on to waste land or to fill up hollows or marshy land.

(c) Mixing with lime and using as manure on fields.

(d) Sorting and disposing of all saleable material such as iron, rags, papers, etc., and reducing all animal and vegetable matter for fertilizer.

(e) Destroying by fire in patent destructor furnaces.

Of all these methods the most popular one is the dumping on waste land. This system must be thoroughly condemned upon sanitary grounds, especially when near a populated district.

Some years ago the local Government Board of England reported that the high death rate in a certain town was undoubtedly due to the close proximity of several large brick yards, where the hollows had been filled up for years with city refuse. The infantile mortality rate, which had been nearly 200 per 1,000 births for several years, suddenly dropped about 50 per cent. when the dumping was stopped and the refuse covered over.

It might be interesting to note how long it takes different classes of refuse to decay. From experiments conducted in England animal and vegetable matter was found to become innocuous in three years. This process is brought about by oxidation. Rags and woolen materials take rather a longer time and faecal matter in trenches three feet deep in a soil of sandy loam disappears entirely in three or four years.

The question of sorting we need not consider as in this city the revenue to be derived from the sale of refuse would hardly pay for the trouble at the present time, but in the near future this may become quite an asset to the city.

Disposal to farmers too is out of the question as many of them would not have the refuse even if you hauled it on to the ground, but the day will come when they will be glad to get it and to pay a fair price for it, too.

There is nothing new in the general principal of the treatment of refuse by cremation. In ancient times the Jews, Romans, Greeks and natives of India purified insanitary difficulties by fire.

As regards our modern methods of disposal by fire the practice and apparatus used to-day are, like most other useful inventions, the result of much experiment and very many expensive failures.

Ordinary type furnaces there are in hundreds, built mostly by ordinary contractors. As a rule they are unscientifically constructed, and not properly designed or adapted to the efficient destruction of refuse. In many of these furnaces it is found absolutely necessary to use large quantities of coal in order to obtain complete combustion of the refuse.

Some of the defects in these furnaces are: Insufficient draught, insufficient area in the flues, low temperatures in the cells, awkward methods of charging and clinkering, cast iron brought in contact with high temperatures, causing speedy destruction of the fittings; too many angles in flues, emission of noxious vapors, smoke, dust and partly consumed refuse, and offensive odors from refuse stored inside the building for long periods.

As to the particular class of destructor that will be suitable to any municipality, much depends on local conditions, but most of the up-to-date destructors, with slight modifications, will be found suitable in any part of the world. While I do not intend to recommend any particular type, I will endeavor to describe one for illustrative purposes.

One of the most modern destructors is that of Messrs. Beaman & Dea. This destructor is, at the present time, commanding a large share of attention throughout the United Kingdom, and several large installations have taken place in the last few years. The refuse to be burnt is hauled up a short incline which is about 8 or 9 feet above the ground level, and is tipped into an enclosed hopper having an opening about two feet square. This can be closed with swing doors so that the refuse is out of sight. From the hopper it passes down on to a fire brick hearth having an inclination towards the furnace

of about 50 degrees. At the bottom of the inclined hearth the refuse is received upon the fire grate, which is five feet square. The grate is about 2 ft. 9 in. above the floor of the ash pit. The grate bars are of the fixed type with a space between them of 3-32 of an inch. The weight of fine ash passing through these openings in a week only amounts to about 4½ cwts.

Vertically under the bridges between the furnace and the combustion chamber is an air culvert, on the top of which are the air blast pipes about 12 inches in diameter, and which discharge into a hermetically closed ashpit immediately under the fire bars. The air is supplied by fans and is easily controlled by the stoker. The forced draught helps to keep the bars cool and the wear and tear of these is very slight. The fumes from the drying refuse on the hearth pass over the fire and over the fire-bridge. The bridge is perforated longitudinally with air passages, these perforations connecting with a miniature flue leading from a grate opening on the face of the brickwork outside. This creates a strong draught, and the air in the course of its passage becomes heated, is discharged near the top of the bridge, and thus meets the fumes passing over into the combustion chamber, and ensures their complete combustion by means of the auxiliary supply of heated oxygen. The principle is somewhat similar to that of the Bunsen burner, or the ordinary gas stove. The combustion chamber is provided with large doors for the admission of infected bedding, large animals and for the periodical removal of fine dust. This type of furnace is a good steam producer and a boiler may be advantageously fixed in combination with each pair of cells and the power used for any purpose for which it may be required and for driving the fans for producing the forced draught.

The capacity of this destructor per cell or ordinary household refuse is about 24 tons per 24 hours. It is also capable of destroying efficiently slaughter house offal, decayed vegetable and fruit, and pressed sewage sludge.

The following results were arrived at during a 24-hour test of one of these destructors:

Dust emitted 0.18 grains per cubic feet (in combustion chamber).

Temperatures (in flue) average 500 degrees F.

Temperatures (in combustion chamber) average 2,000 degrees F.

Clinker free from carbonaceous matter.

Gaseous products inoffensive.

Refuse consumed per cell per hour 2,000 lbs.

Proportion clinker to refuse consumed, 15 per cent.

Average steam pressure, 105 lbs.

Draught velocity, 820 feet per minute.

Moisture in refuse, 30 per cent.

Weight of water evaporated per lb of refuse, 1.5 lb.

Pressure in ash pits, 2½ lbs.

Coal used, nil.

Cast iron was melted at intervals during the test, showing a temperature of not less than 2,100 degrees F.

A good deal is often heard respecting the nuisance that arises from the consumption of refuse by cremation, due chiefly to the design and management of many old types of furnaces. At the present time there is no reason whatever why any destructor properly designed and managed should be a source of the slightest nuisance. It is often the case that the efficiency of a destructor is prejudged, and the knowledge that one exists in the neighborhood is often quite sufficient evidence of its being a nuisance, and all kinds of imaginary complaints are at once conjured up by popular prejudice. It cannot be denied, however, that a destructor, if not properly designed and operated, can be a very decided offender in the direction indicated.

In perusing this paper before presenting it to you, I find many points of the subject that I am dealing with have been omitted, but to deal effectively with such an extensive subject in a short paper of this nature is impossible, and any particular point on which any of you are in doubt, I shall be pleased to explain to you if it lies in my power to do so.

# Infantile Diarrhoea



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## Treatment of Infantile Diarrhoea

To each half-pint of Rice or Barley Water add one eggspoonful of Virol. Give one or two ounces of this mixture every two hours. In cases of great prostration add ten to fifteen minims of Brandy. When the evacuations indicate that the infection is at an end Sterilized Milk can be cautiously

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House flies are now recognized as MOST SERIOUS CARRIERS OF THE GERMS OF CERTAIN DISEASES such as typhoid fever, tuberculosis, infantile diarrhoea, etc.

They infect themselves in filth and decaying substances, and by carrying the germs on their legs and bodies they pollute food, especially milk, with the germs of these and other diseases and of decay.

**NO FLY IS FREE FROM GERMS**

**THE BEST METHOD IS TO PREVENT THEIR BREEDING**

House flies breed in decaying or decomposing vegetable and animal matter and excrement. THEY BREED CHIEFLY IN STABLE REFUSE. In cities this should be stored in dark fly-proof chambers or receptacles, and it should be REGULARLY REMOVED WITHIN SIX DAYS in the summer. Farm-yard manure should be regularly removed within the same time and either spread on the fields or stored at a distance of not less than quarter of a mile, the further the better, from a house or dwelling.

House flies breed in such decaying and fermenting matter as kitchen refuse and garbage. Garbage receptacles should be kept tightly covered.

ALL SUCH REFUSE SHOULD BE BURNT OR BURIED within a few days, BUT AT ONCE IF POSSIBLE. NO REFUSE SHOULD BE LEFT EXPOSED. If it cannot be disposed of at once it should be sprinkled with chloride of lime.

## FLIES IN HOUSES.

Windows and doors should be properly screened, especially those of the dining-room and kitchen. Milk and other food should be screened in the summer by covering it with muslin; fruit should be covered also.

Where they are used, especially in public places as hotels, etc., spittoons should be kept clean as there is very great danger of flies carrying the germs of consumption from unclean spittoons.

Flies should not be allowed to have access to the sick room, especially in the case of infectious disease.

The faces of babies should be carefully screened with muslin.

FLIES MAY BE KILLED by means of a weak solution of formalin (40 per cent.) exposed in saucers in the rooms. This is made by adding a teaspoonful of formalin to a pint of water. The burning of pyrethrum in a room is also effective.

House flies indicate the presence of filth in the neighborhood or insanitary conditions.

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(33)

### How to Use

Open Tanglefoot slowly. In cool weather warm slightly. For best results place Tanglefoot on a chair near window at night. Lower all shades, leaving one at the Tanglefoot window raised about a foot. The early morning light attracts the flies to the Tanglefoot, where they are caught.

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I hereby acknowledge receipt of your Company's cheque for two thousand five hundred dollars in full payment of my claim.

*The accident occurred within two days of the taking out of my Policy*

I wish to express my appreciation of your prompt and unquestioning settlement of my claim and also the kindness which your Inspector and agent have shown me during my illness.

I shall most heartily recommend the General Accident Assurance Company to my friends and any who may wish to obtain accident or sickness protection.

Yours sincerely

A. W. PECK

Mr. Peck, of Calgary, on a visit to his old home, applied for insurance through our Belleville, Ontario, Agency, on March 1th, 1914.

On March 13th, while hunting, an accidental discharge of shotgun caused an injury necessitating amputation of foot.

### Prompt and Fair Settlements

make our Companies satisfactory to insure with. Your business respectfully solicited

**The General Accident Assurance Co. of Canada**  
**The Canadian Casualty and Insurance Co.**

The above Companies are under the same management and control.

Head Offices : Continental Life Bldg., Toronto  
JOHN J. DURANCE, Manager

## UNIVERSITY OF TORONTO

### FACULTY OF ARTS.

Instruction in the courses leading to the degree of B.A., M.A., and Ph.D. is given in the University, University College, Victoria College and Trinity College.

The Colleges provide instruction in the Classical, Modern and Semitic Languages and Literature, Ancient History and Ethics. The University gives training in the remaining subjects of the curriculum.

### FACULTY OF MEDICINE.

Complete courses of instruction with ample opportunities for clinical training at the General Hospital, St. Michael's Hospital, Hospital for Sick Children, leading to M.D. and D.P.H.

### FACULTY OF APPLIED SCIENCE.

Courses in Civil, Mining, Mechanical, Electrical and Chemical Engineering; Architecture and Applied Chemistry leading to the Degree of B.A.Sc.

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Courses for normal and occasional students.

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Professional training for Public School, High School and Inspector's certificates.

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Courses leading to the diploma and the degree.

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The affiliated Colleges and Schools train candidates for University standing in Dentistry, Pharmacy, Agriculture, Music, and Veterinary Science.

For information apply to the Registrar of the University, or to the Secretaries of the respective Faculties, Toronto, Ont.





## Hearts of Oak

IT takes decades to bring the oak from the acorn;  
but the oak breasts any gale that blows.

For nearly a third of a century the North American Life has driven its roots deep into the bed-rock of financial stability.

To-day its financial position is impregnable.

It is heart-of-oak.

Every North American Life Policy is backed by Thirteen and One Quarter Million Dollars of Assets and by three decades of upright business practice.

The North American Life is a *safe* Company in which to insure.

### North American Life Assurance Company

"SOLID AS THE CONTINENT"

Head Office

-

Toronto, Canada

## An Anchor to Windward

In times like these, when securities ordinarily as good as gold can find no market, a policy in a good Life Company has a value nothing else can approach. Either at its maturity or as a temporary pledge it is always worth 100 cents on the dollar. If in the Canada Life it will probably be worth a good deal more.

Will it not be worth your while when you next have money to invest to remember present conditions and place it where it will be not only absolutely safe but perfectly under control?

### Canada Life Assurance Company

**We Will NOT Advertise.**

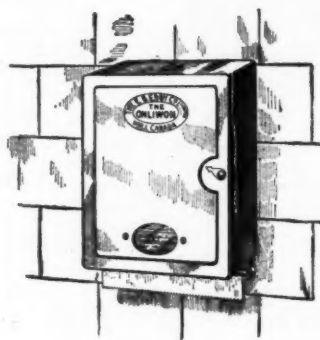
**NOSTRUMS  
PATENT MEDICINES  
FAKE CONCERNS**

*Note the Quality of our  
Advertisements*

*If your product is worth while,  
advertise it only in good company*

**The Public Health Journal**  
ORGAN  
OF VOLUNTARY AND  
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**Finished in beautiful nickel plate.**

**Cannot get out of order.**

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Explains how an injustice is done the physician and patient by prescribing unstable, inefficient and frequently fraudulent proprietary medicinal products.

READ this book and you will realize the danger which the physician encounters by prescribing proprietary products of unknown composition.

ANALYZE its contents and you will understand why the physician must be cautious so as not to be deceived by vague and mysterious statements regarding unknown proprietary remedies.

**REVISED AND GREATLY ENLARGED**  
375 pages. 101 Illustrations. Cloth. Price, \$1.00

**American Medical Association**

636 North Dearborn Street

CHICAGO, ILL.

We want an "Onliwon" in all the better homes and public buildings throughout Canada.

Simply buy your regular supply of Toilet Paper from us, and one Cabinet—to introduce—will be given absolutely without cost.

To architects, builders, building superintendents, hospital superintendents and hotel proprietors—we are ready to supply any number of "Onliwon" Cabinets—**FREE**—on the same basis as we offer to the ordinary householder.

*Write now for prices of paper and full particulars*

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**HULL - CANADA**

Branches and Agencies in 25 Canadian Cities

# THE ROYAL BANK OF CANADA

Capital Authorized	- -	\$25,000,000
Capital Paid Up	- -	\$11,560,000
Reserve Funds	- - -	\$13,000,000
Total Assets	- - -	\$180,000,000

## HEAD OFFICE: MONTREAL.

H. S. HOLT, President

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315 Branches in CANADA and NEWFOUNDLAND; 30 Branches in the WEST INDIES

LONDON, ENGLAND, Princes St., E.C.

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SAVINGS DEPARTMENT AT ALL BRANCHES.

## INVEST YOUR SAVINGS NOW

and Create a Reliable Asset.

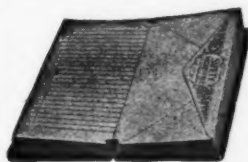
THE LONDON and LANCASHIRE LIFE and GENERAL ASSURANCE ASSOCIATION, Limited  
(CANADIAN BRANCH)

Head Office, MONTREAL.

ALEX. BISSETT, Manager for Canada

Policies World-Wide and Free from Restrictions.

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THE BARLER NEW DOCUMENT FILE (opens like a book). A handy file in your office, your home, or in your safety deposit box at the bank. Steel covers with flanged edges, bound in seal grain keratol leather. Cord allows expansion to suit contents, and holds fast in any position without tying.

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The A. S. HUSWITT CO., 44 Adelaide St. W., TORONTO

**YOUR HEALTH IS GOOD****SUN LIFE**

*to-day*, perhaps, but  
that is no guarantee  
that it will be  
good *to-morrow*.

You may be able  
to get life assur-  
ance *to-day*.

*To-morrow*—  
who knows?

Life As-  
surance  
creates im-  
mediately, for  
the benefit of  
your family in the  
event of your death,  
an estate that it  
would take long years  
to accomplish by other means.

**ASSURANCE COMPANY OF CANADA****"GOOD AS GOLD"**

ARE THE  
**POLICIES**  
OF THE

**London Life****Insurance Company****Head Office: LONDON, CANADA**

Maturing 20-Year Endowment  
in the ordinary Branch show  
returns of \$140 per \$100 paid in  
premiums.

Full Insurance Protection in  
addition.

Ask for samples of Actual  
Results.

**In the Same Boat.**

The house doctor of a Cincinnati theatre sometimes tires of his office; hence the following:

One evening an excite dusher rushed to the doctor's seat and whispered a brief message. The occupant rose at once and both men left the orchestra rather hastily and made for the dressing rooms.

"It's the leading lady," wailed one of the actresses, meeting them; "come this way."

"Have you poured water on her head?" inquired the doctor, solemnly.

"Yes, from the fire bucket."

"The fire bucket!—what a fearful blunder! Here," and he scribbled a line on a card, "take this to the drug store and get it filled."

When the leading lady found herself alone with the doctor, she opened her eyes. "Doctor," she gasped, "you're a good fellow, aren't you? I know you are aware that there's nothing the matter with me. I want a day off, and I don't want to go on in this act. Can you fix it?"

"You bet I can," said the doctor, wringing her hand, sympathetically. "I ain't no doctor. I came in on his ticket."  
—Lippincott's Magazine.

**It Does Sound Queer.**

The following letter from a leading German newspaper was recently received by one of our big American dailies:

Esteemed Gentlemen: An issue of your excellent paper of the date of October 23 contained, under the heading, "Election Returns," the following statement:

"As the count proceeded, it became evident that Brown had been scratched repeatedly by the women voters."

The above situation not being entirely clear to us, kindly afford us enlightenment on the following points:

1. Where was the count going.
2. Was he German?
3. What had Mr. Brown done that the ladies should desire to scratch him?

Thanking you kindly in advance for the desired information, we beg to remain,

Very truly yours, The Editors.

—Youth's Companion.



*Norwich Cathedral.*

# NORWICH UNION FIRE INSURANCE SOCIETY LIMITED

*Norwich, England*

INSURANCE AGAINST  
**FIRE, ACCIDENT & SICKNESS**  
**EMPLOYERS LIABILITY**  
PLATE GLASS

Agents wanted for the Accident Branch

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## WAR

Will test the strength of the World's Financial Institutions.

## THE NATIONAL LIFE

ASSURANCE COMPANY OF CANADA

holds an IMPREGNABLE POSITION by reason of the Unequalled character of its Assets, which are immune from the effects of War, Panic or Depression.

A Continuous Record for Fifteen Years

**NO ARREARS** of Interests or Principal on any of its invested funds.

**SAFETY FIRST**  
**A COMPANY OF QUALITY**

**SEVERAL GOOD AGENCY OPENINGS FOR PRODUCERS**  
Apply direct to Head Office-25 Toronto St., TORONTO.

**ALBERT J. RALSTON**  
*Managing Director.*

**ELIAS ROGERS, President.**

**F. SPARLING,**  
*Secretary.*



## THE CENTRAL CANADA LOAN AND SAVINGS CO.

26 King St. East, Toronto.

Total Assets	\$9,917,000.
Capital (sub.)	\$2,500,000.
Capital (paid up)	\$1,750,000.
Reserve Fund	\$1,750,000.

Deposits received and debentures issued.

President  
E. R. Wood

Vice-President  
H. C. Cox

Vice-President  
G. A. Morrow

## DEATH IS CERTAIN

for all of us. The only uncertainty is when it may visit you. Life Insurance provides protection for your dependents by creating an immediate cash estate in the event of your death.

Last year this Company

**Paid Death Claims of \$491,529.52**

Get a Policy To-Day in

## THE MANUFACTURERS LIFE

Insurance Company

**Special Terms and Rates  
to Total Abstainers.**

Write for Booklet "Total Abstainers vs. Moderate Drinkers." It will interest you.

Head Office, Toronto: King and Yonge Sts.

### A Debt to Science.

"What a debt we owe to medical science!" he said, as he put down the paper. "Good heavens!" she exclaimed. "Haven't you paid that doctor's bill yet?"—Chicago Post.

### No Danger En Route.

The following statement is copied from a coffin en route over the M., K. and T. line:

"To whom it may concern:

"This is to certify that C. V. Blank, age 24th died at 2 p.m. to-day of Bright's Disease and other stomach and Bowel Complaints.

"The patient was also effected with Tuberculosis of the Bowels.

"The public is in no danger from handling this coffin as the disease was not contagious or affectional.

"X. Y. Z., Attending Physician."

### Faithful Unto Death.

A reporter on a Kansas City paper was among those on a relief train that was being rushed to the scene of a railway wreck in Missouri. About the first victim the Kansas City reporter saw was a man sitting in the road with his back to a fence. He had a black eye, his face was somewhat scratched, and his clothes were baly torn—but he was entirely calm.

The reporter jumped to the side of the man against the fence. "How many hurt?" he asked of the prostrate one.

"Haven't heard of anybody being hurt," said the battered person.

"What was the cause of the wreck?"

"Wreck? Haven't heard of any wreck."

"You haven't heard of any wreck? Who are you, anyhow?"

"Well, young man, I don't know that that's any of your business, but I am the claim agent of this road."—Harper's Magazine.

### A Dangerous Symptom.

Owner of Car—Why did you leave your last place?

Chauffeur—The guy I worked for went crazy. Started shingling his house when the car needed new tires.—Puck.

Night Watchman (in any European town): "Eight o'clock—and all's hell."

# CONTINENTAL LIFE

Insurance Company

HEAD OFFICE - TORONTO

"BROAD AS THE CONTINENT, STRONG AS THE EMPIRE."

¶ In this age of strenuous competition and rush for business the only safety for the business man lies in a

## GOOD LIFE INSURANCE POLICY

¶ The POLICIES of the CONTINENTAL LIFE are liberal and unrestricted, and carry the highest guaranteed Cash and Loan Values, Paid-up and Extended Assurance Options.

*For Particulars write to the HEAD OFFICE or any of the Company's Agents.*

GEORGE B. WOODS,  
President and Managing-Director.

CHARLES H. FULLER,  
Secretary and Actuary.

### A TYPICAL POLICY RESULT OF

## THE DOMINION LIFE, OF WATERLOO, ONTARIO

Policy No. 6. 10 Pay't 25 Year Endowment, profits to increase sum assured. Premium, \$112.00. Amount, \$2000.00.

Amount increased at end of 5 years to	-	-	\$2070.00
" " " 10 "	-	-	2150.00
" " " 15 "	-	-	2210.00
" " " 20 "	-	-	2300.00
" " " 25 "	-	-	2589.34

Assured paid 10 premiums of \$112.00 each. Receives \$231.19 for every \$100.00 invested, that is, his money returned with compound interest at 4½%, in addition to insurance protection.

ESTABLISHED 1875

# Imperial Bank of Canada

HEAD OFFICE - TORONTO

Capital Paid Up	:	:	:	:	:	7,000,000.00
Reserve Fund	:	:	:	:	:	7,000,000.00

## SAVINGS DEPARTMENT

INTEREST ALLOWED ON DEPOSITS AT BEST CURRENT RATES

## Investment vs. Speculation

"A high return should at once excite suspicion in the mind of the prospective investor."—Financial Post.

There are securities which promise a high rate of interest and the chance of an increase in value, but for those dependent upon the income from their investment, or endeavoring to lay up money for their old age, they are too speculative. With such, the Bonds of the Canada Permanent Mortgage Corporation are a favorite investment, because they know that if they invest \$1000 in these Bonds they will get the \$1000 when it becomes due, and that the interest upon it will be promptly paid in the meantime.

These bonds may be obtained in any sum from one hundred dollars upward. They are, therefore, available for the investment of small sums.

### Canada Permanent Mortgage Corporation

Paid-up Capital and Reserve Fund exceed TEN MILLION DOLLARS

TORONTO STREET - - TORONTO

ESTABLISHED 1855

## Savings Bank Insurance

**A**N Endowment Policy serves the double purpose of protecting the family, and at the same time constitutes a savings bank account.

Under such a policy the assured's family is protected should he die during a specified period, but the principal sum and profits are payable to himself should he survive to the end of the term.

So that a Mutual Life Endowment is really a savings bank account and life insurance combined. There is no better way to employ surplus income than to purchase with it an Endowment Policy in

**The Mutual Life Assurance Company of Canada**

Waterloo - Ontario

# THE CANADIAN BANK OF COMMERCE

ESTABLISHED 1867.

Sir Edmund Walker, C.V.O., LL.D., D.C.L., President  
Alexander Laird, General Manager. John Aird, Assistant General Manager  
Paid-up Capital \$15,000,000 Rest \$13,500,000

## HEAD OFFICE, TORONTO.

London, England: 2 Lombard Street, E.C. New York: 16 Exchange Place.  
Mexico City: Avenida San Francisco, No. 50. St. John's, Nfld.

In addition to the offices named above, the Bank has branches in every province of Canada and is therefore particularly well equipped for the handling of collections and the transaction of every description of banking business.

Drafts and Money Orders on all the principal countries of the world issued by every branch of the Bank.

Travellers' Cheques are a most convenient form in which to carry money when travelling. They can be used either at home or abroad and the exact amount payable in foreign money is printed on the face of each cheque. The cheques are issued in denominations of \$10, \$20, \$50, \$100 and \$200, and are obtainable at any branch of the Bank.

Letters of Credit issued negotiable in all parts of the world.

## The Metropolitan Life Insurance Co

wrote more Ordinary insurance in the United States and Canada in 1913 than any other company. The amount was \$230,563,693, which was all the law permitted it to write. In Canada the amount of Ordinary written was \$18,275,895.

It furnishes Industrial life insurance to wage earners substantially at cost. It has in Canada almost 700,000 Industrial policies outstanding, which are held by workingmen.

In an attempt to lessen the death rate it has established a free nursing service, and in 1913 Metropolitan nurses made more than 1,127,000 visits to 175,757 sick Industrial policyholders, free of charge.

The Company has distributed millions of pamphlets giving valuable hints on the improvement of health conditions and the prevention of disease.

It has on deposit, with the Dominion Government and trustees, for the protection of Canadian policyholders, nearly sixteen-and-a-half million dollars of securities.

It paid in 1913, 167,017 policy claims, amounting to \$27,801,848.12.

<b>Assets</b>	-	-	-	<b>\$447,829,229.16</b>
<b>Capital and Surplus</b>	-	-	-	<b>35,584,901.65</b>
<b>Liabilities</b>	-	-	-	<b>412,244,327.51</b>

(According to the report for 1913 filed with the New York State Department.)

## Metropolitan Life Insurance Co.

1 Madison Avenue

New York City

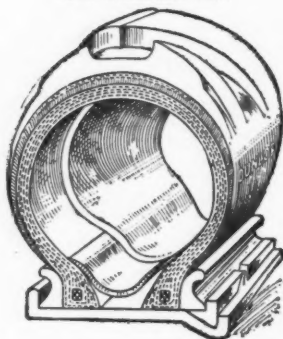


## SOLVING THE TIRE QUESTION

Every day our laws appear to be getting more stringent against the motorist, no doubt because of the multiplicity of avoidable mishaps. You need every assistance you can get to give you absolute control of the car. Dunlop Traction Treads solve the tire end of it for you.

Dunlop Traction Tread  
Straight Side  
Our Patented Tire

66  
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did  
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